MATHS

BOOKS - ICSE

TRIGONOMETRICAL RATIOS

Example

1. Evaluate :

(i) $\sin^2 30^\circ - 2\cos^3 60^\circ + 3\tan^4 45^\circ$

(ii) $(\cos 0^\circ + \sin 45^\circ + \sin 30^\circ)(\sin 90^\circ - \cos 45^\circ + \cos 60^\circ)$

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2. Find the value of :

$$\frac{\sin 30^\circ - \sin 90^\circ + 2\cos 0^\circ}{\tan 30^\circ \times \tan 60^\circ}$$

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3. If $A = 60^\circ$, verify that :

(i) $\sin^2 A + \cos^2 A = 1$ (ii) $\sec^2 A - \tan^2 A = 1$

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4. If $x = 15^\circ$, evaluate : $8 \sin 2x \cos 4x \sin 6x$

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5. If $A = 60^\circ$ and $B = 30^\circ$, prove that :

$$\sin(A - B) = \sin A \cos B - \cos A \sin B$$

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6. If $A = 30^\circ$, then prove that :

$$\cos 3A = 4\cos^3 A - 3\cos A$$

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7. Find A, if :

$\sin 2A = 1$

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8. Find A, if :

$2\cos 3A = 1$

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9. Find A, if :

$(\sec A - 2)(\tan 3A - 1) = 0$

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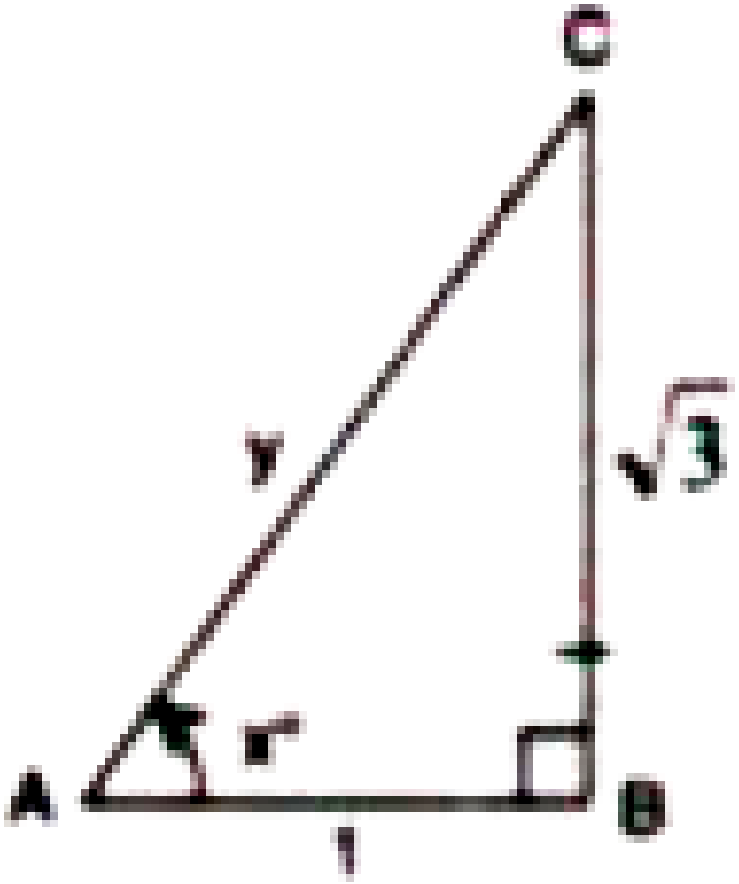
10. From the adjoining figure, find : $\tan x^\circ$



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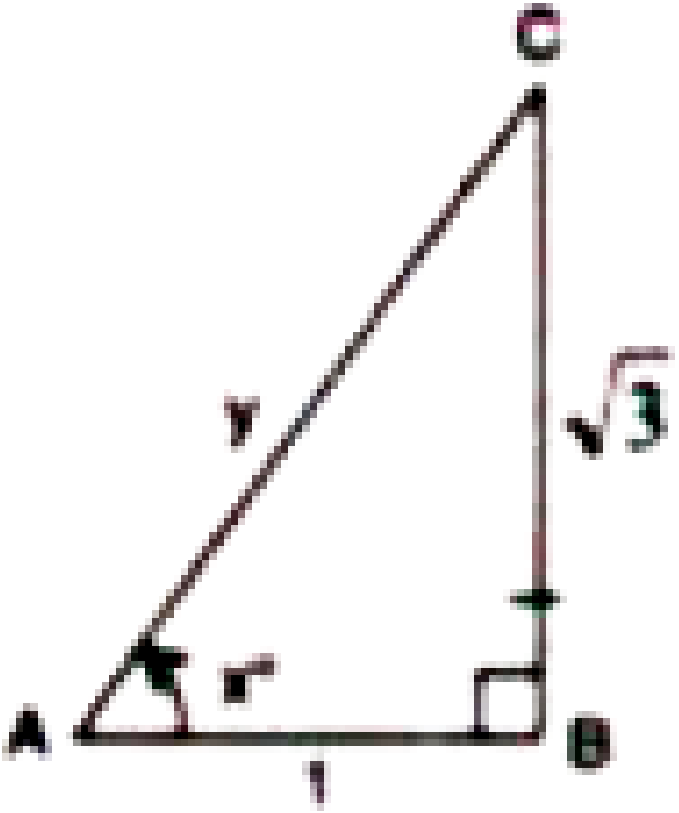
11. From the adjoining figure, find :



x°

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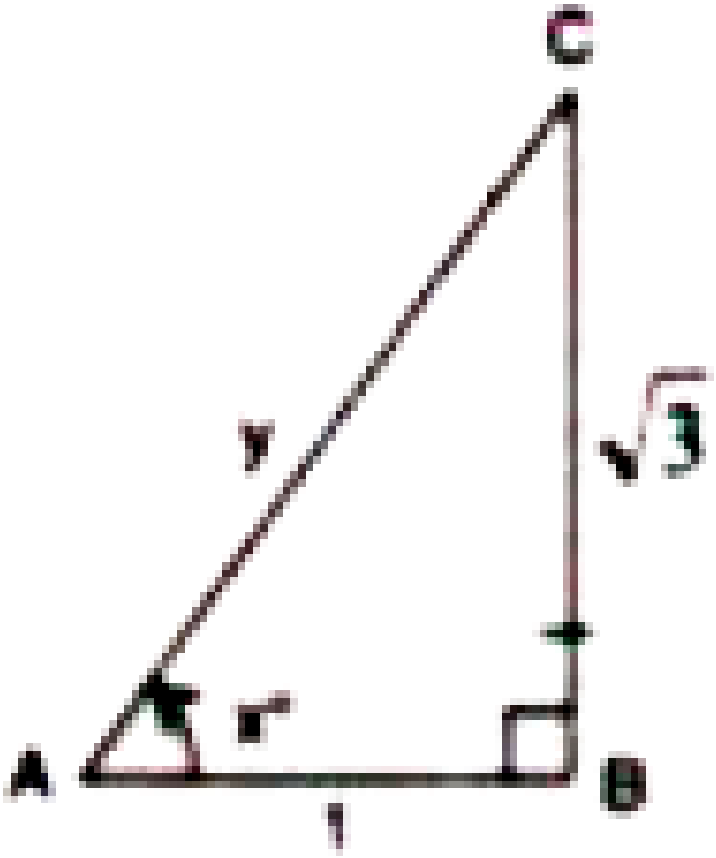
12. From the adjoining figure, find : $\cos x^{\circ}$



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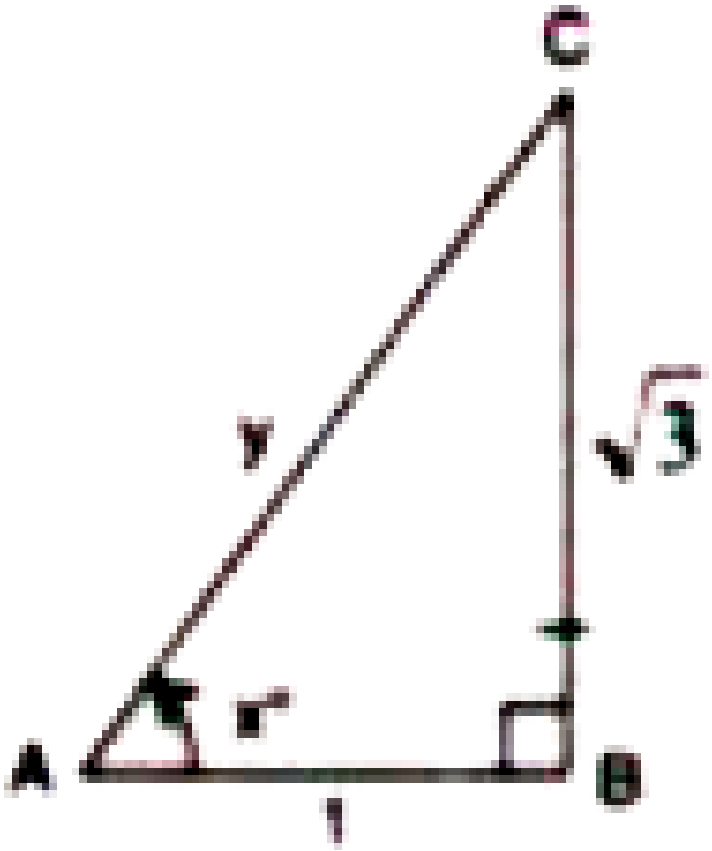
13. From the adjoining figure, find :



use $\tan x^\circ$ to find y.

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14. If $4\sin^2 x^\circ - 3 = 0$ and x° is an acute angle, find :

(i) $\sin x^\circ$ (ii) x°

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15. Find the magnitude of angle A, if :

$4\sin A \sin 2A + 1 - 2\sin 2A = 2\sin A$

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16. Find the magnitude of angle A, if :

$2\sin^2 A - 3\sin A + 1 = 0$

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17. Find the magnitude of angle A, if :

$3\cot^2(A-5^\circ)=1$

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18. Find the magnitude of angle A, if :

$\sin^2 2A+\sin^2 60^\circ=1$

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19. Find acute angles A and B, if $\sin(A+B)=\cos(A-B)=\frac{\sqrt{3}}{2}$.

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20. If $\tan(A+B)=\sqrt{3}$ and $\sqrt{3}\tan(A-B)=1$, find the angles A and B,where A and B are Acute Angles.

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21. If $\sqrt{3}\tan 2\theta = 3$ and $0^\circ < \theta \leq 90^\circ$, find the value of $3\sqrt{3}\cos\theta + 2\sin\theta - 6\tan^2\theta$.

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22. Solve for $\theta(0^\circ < \theta < 90^\circ)$:

$$\sin^2\theta - \frac{1}{2}\sin\theta = 0$$

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23. Solve for $\theta(0^\circ < \theta < 90^\circ)$:

$$2\sin^2\theta - 2\cos\theta = \frac{1}{2}$$

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24. Solve for $\theta(0^\circ < \theta < 90^\circ)$:

$\tan^2\theta + 3 = 3\sec\theta.$

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25. Evaluate :

(i) $\sin^2 30^\circ - 2\cos^3 60^\circ + 3\tan^4 45^\circ$

(ii) $(\cos 0^\circ + \sin 45^\circ + \sin 30^\circ)(\sin 90^\circ - \cos 45^\circ + \cos 60^\circ)$

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26. Find the value of :

$$\frac{\sin 30^\circ - \sin 90^\circ + 2\cos 0^\circ}{\tan 30^\circ \times \tan 60^\circ}$$

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27. If $A = 60^\circ$, verify that :

(i) $\sin^2 A + \cos^2 A = 1$ (ii) $\sec^2 A - \tan^2 A = 1$

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28. If $x = 15^\circ$, evaluate : $8 \sin 2x \cos 4x \sin 6x$

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$$\sin(A - B) = \sin A \cos B - \cos A \sin B$$

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$$\cos 3A = 4 \cos^3 A - 3 \cos A$$

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31. Find A, if :

$\sin 2A = 1$

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32. Find A, if :

$2\cos 3A = 1$

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33. Find A, if :

$(\sec A - 2)(\tan 3A - 1) = 0$

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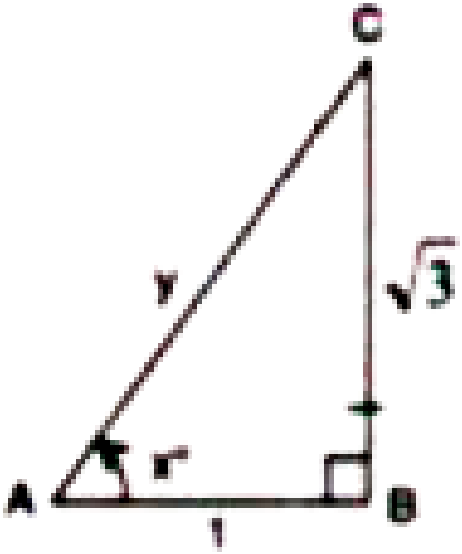
34. From the adjoining figure, find :



$\tan x^{\circ}$

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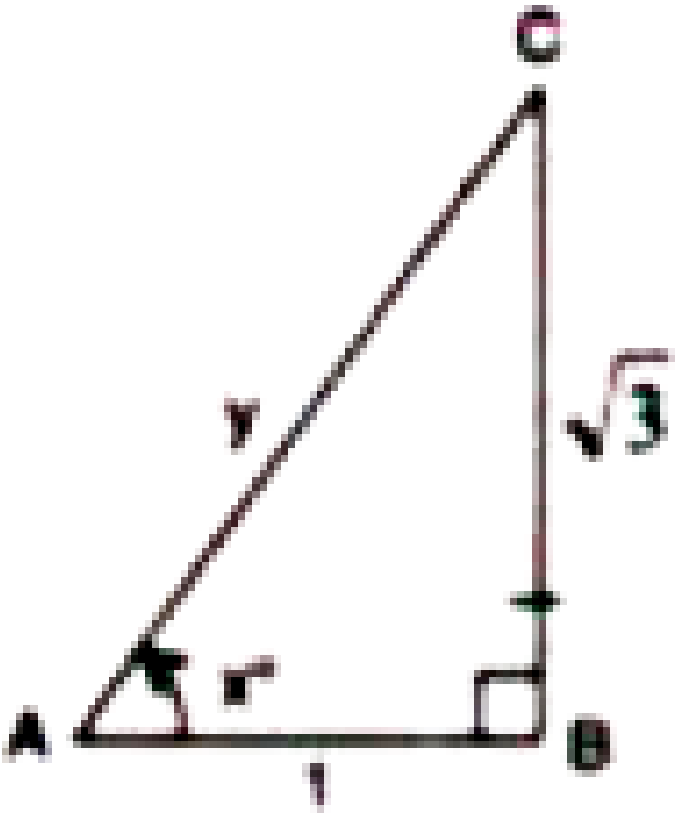
35. From the adjoining figure, find :



x°

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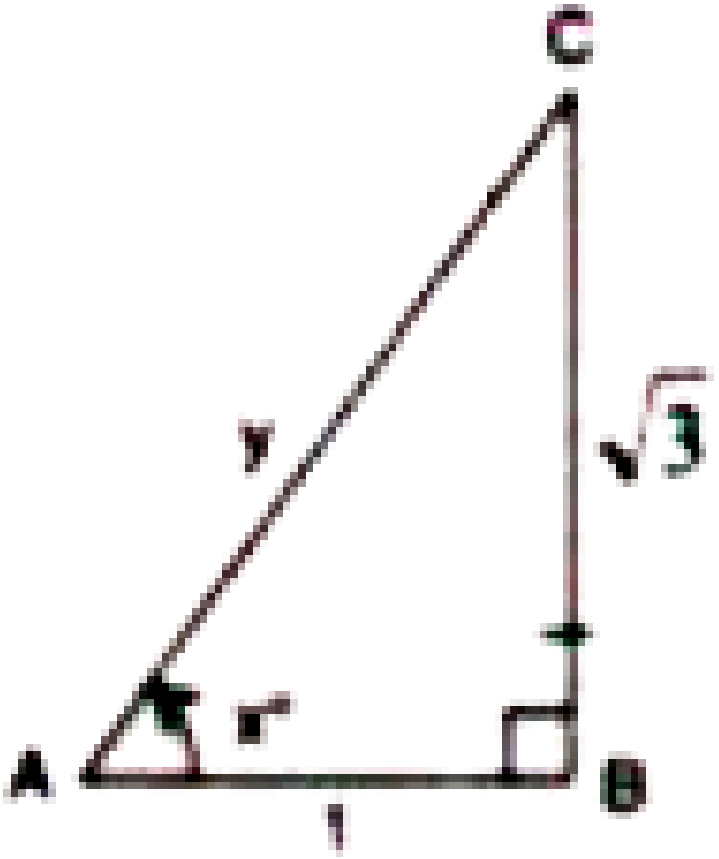
36. From the adjoining figure, find :



$\cos x^{\circ}$

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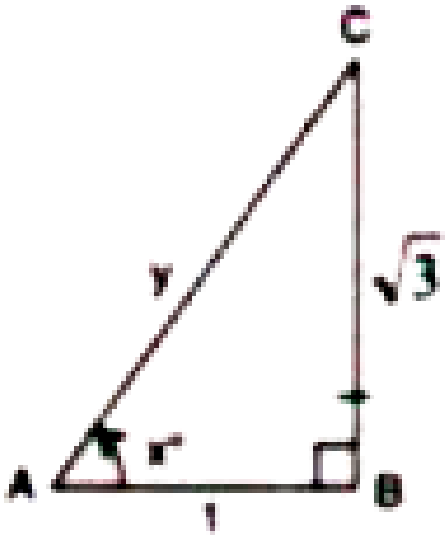
37. From the adjoining figure, find :



use $\sin x^\circ$ to find y.

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38. If $4\sin^2 x^\circ - 3 = 0$ and x° is an acute angle, find :

(i) $\sin x^\circ$ (ii) x°

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39. Find the magnitude of angle A, if :

$4 \sin A \sin 2A + 1 - 2 \sin 2A = 2 \sin A$

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40. Find the magnitude of angle A, if :

$2 \sin^2 A - 3 \sin A + 1 = 0$

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41. Find the magnitude of angle A, if :

$3 \cot^2 (A - 5^\circ) = 1$

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42. Find the magnitude of angle A, if :

$\sin^2 2x + \sin^2 60^\circ = 1$

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43. Find acute angles A and B, if $\sin(A+B) = \cos(A-B) = \frac{\sqrt{3}}{2}$.

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44. If $\tan(A+B) = \sqrt{3}$ and $\sqrt{3}\tan(A-B) = 1$, find the angles A and B.

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45. If $\sqrt{3}\tan 2\theta = 3$ and $0^\circ < \theta \leq 90^\circ$, find the value of $3\sqrt{3}\cos\theta + 2\sin\theta - 6\tan^2\theta$.

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46. Solve for $\theta(0^\circ < \theta < 90^\circ)$:

$$\sin^2\theta - \frac{1}{2}\sin\theta = 0$$

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47. Solve for $\theta(0^\circ < \theta < 90^\circ)$:

$$2\sin^2\theta - 2\cos\theta = \frac{1}{2}$$

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48. Solve for $\theta(0^\circ < \theta < 90^\circ)$:

$$\tan^2\theta + 3 = 3\sec\theta.$$

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Exercise 23 A

1. Find the value of :

$\sin 30^\circ \cos 30^\circ$

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2. Find the value of :

$\tan 30^\circ \tan 60^\circ$

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3. Find the value of :

$\cos^2 60^\circ + \sin^2 30^\circ$

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4. Find the value of :

$\cos ec^2 60^\circ - \tan^2 30^\circ$

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5. Find the value of :

$\sin^2 30^\circ + \cos^2 30^\circ + \cot^2 45^\circ$

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6. Find the value of :

$\cos^2 60^\circ + \sec^2 30^\circ + \tan^2 45^\circ$

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7. Find the value of :

$\tan^2 30^\circ + \tan^2 45^\circ + \tan^2 60^\circ$

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8. Find the value of :

$$\frac{\tan 45^\circ}{\cos ec 30^\circ} + \frac{\sec 60^\circ}{\cot 45^\circ} - \frac{5\sin 90^\circ}{2\cos 0^\circ}$$

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9. Find the value of :

$3\sin^2 30^\circ + 2\tan^2 60^\circ - 5\cos^2 45^\circ$

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10. Prove that :

$\sin 60^\circ \cos 30^\circ + \cos 60^\circ . \sin 30^\circ = 1$

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11. Prove that :

$\cos 30^\circ . \cos 60^\circ - \sin 30^\circ . \sin 60^\circ = 0$

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12. Prove that :

$\cos ec^2 45^\circ - \cot^2 45^\circ = 1$

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13. Prove that :

$\cos^2 30^\circ - \sin^2 30^\circ = \cos 60^\circ$

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14. Prove that :

$\left(\frac{\tan 60^\circ + 1}{\tan 60^\circ - 1}\right)^2 = \frac{1 + \cos 30^\circ}{1 - \cos 30^\circ}$

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15. Prove that :

$3 \cos ec^2 60^\circ - 2 \cot^2 30^\circ + \sec^2 45^\circ = 0.$

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16. Prove that :

$$\sin(2 \times 30^\circ) = \frac{2\tan 30^\circ}{1 + \tan^2 30^\circ}$$

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17. Prove that :

$$\cos(2 \times 30^\circ) = \frac{1 - \tan^2 30^\circ}{1 + \tan^2 30^\circ}$$

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18. Prove that :

$$\tan(2 \times 30^\circ) = \frac{2\tan 30^\circ}{1 - \tan^2 30^\circ}$$

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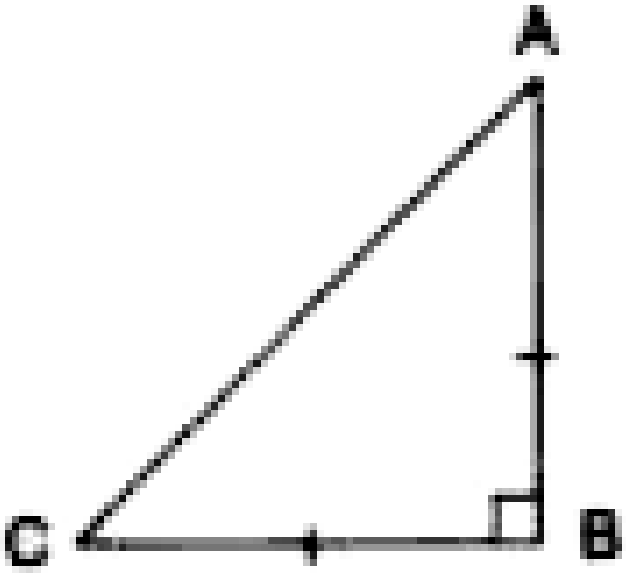
19. ABC is an isosceles right-angled triangle. Assuming AB = BC = x, find the value of each of the following trigonometric ratios :



(i) $\sin 45^\circ$

(ii) $\cos 45^\circ$

(iii) $\tan 45^\circ$

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20. Prove that :

$\sin 60^\circ = 2\sin 30^\circ \cos 30^\circ$.

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21. Prove that :

$4\left(\sin^4 30^\circ + \cos^4 60^\circ\right) - 3\left(\cos^2 45^\circ - \sin^2 90^\circ\right) = 2$

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22. If $\sin x = \cos x$ and x is acute, state the value of x.

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23. If $\sec A = \operatorname{cosec} A \quad \text{and} \quad 0^\circ \leq A \leq 90^\circ$, state the value of A.

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24. If $\tan\theta = \cot\theta \quad \text{and} \quad 0^\circ \leq \theta \leq 90^\circ$, state the value of θ.

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25. If $\sin x = \cos y$, write the relation between x and y, if both the angles x and y are acute.

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26. If $\sin x = \cos y$, then $x + y = 45^\circ$, write true or false.

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27. $\sec\theta . \cot\theta = \cos ec\theta$, write true or false.

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28. For any angle θ, state the value of :

$$\sin^2\theta + \cos^2\theta.$$

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29. State for any acute angle θ whether :

$\sin\theta$ increases or decreases as θ increases.

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30. State for any acute angle θ whether :

$\cos\theta$ increases or decreases as θ increases.

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31. State for any acute angle θ whether :

$\tan\theta$ increases or decreases as θ decreases.

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32. If $\sqrt{3} = 1 \cdot 732$, find (correct to two decimal places) the value of the following $\sin 60^\circ$

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33. Evaluate :

$$\frac{\cos 3A - 3\cos 4A}{\sin 3A + 2\sin 4A}, \quad \text{when} \quad A = 15^\circ.$$

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34. Evaluate :

$$\frac{3\sin 3B + 2\cos(2B + 5^\circ)}{2\cos 3B - \sin(2B - 10^\circ)},$$

when $B = 20^\circ$.

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35. Find the value of :

$\sin 30^\circ \cos 30^\circ$

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36. Find the value of :

$\tan 30^\circ \tan 60^\circ$

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37. Find the value of :

$\cos^2 60^\circ + \sin^2 30^\circ$

Watch Video Solution

38. Find the value of :

$\cos ec^2 60^\circ - \tan^2 30^\circ$

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39. Find the value of :

$\sin^2 30^\circ + \cos^2 30^\circ + \cot^2 45^\circ$

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40. Find the value of :

$\cos^2 60^\circ + \sec^2 30^\circ + \tan^2 45^\circ$

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41. Find the value of :

$\tan^2 30^\circ + \tan^2 45^\circ + \tan^2 60^\circ$

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42. Find the value of :

$$\frac{\tan 45^\circ}{\cos ec 30^\circ} + \frac{\sec 60^\circ}{\cot 45^\circ} - \frac{5\sin 90^\circ}{2\cos 0^\circ}$$

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43. Find the value of :

$3\sin^2 30^\circ + 2\tan^2 60^\circ - 5\cos^2 45^\circ$

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44. Prove that :

$\sin 60^\circ \cos 30^\circ + \cos 60^\circ . \sin 30^\circ = 1$

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45. Prove that :

$\cos 30^\circ . \cos 60^\circ - \sin 30^\circ . \sin 60^\circ = 0$

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46. Prove that :

$\cos ec^2 45^\circ - \cot^2 45^\circ = 1$

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47. Prove that :

$\cos^2 30^\circ - \sin^2 30^\circ = \cos 60^\circ$

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48. Prove that :

$\left(\frac{\tan 60^\circ + 1}{\tan 60^\circ - 1}\right)^2 = \frac{1 + \cos 30^\circ}{1 - \cos 30^\circ}$

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49. Prove that :

$3\cos ec^2 60^\circ - 2\cot^2 30^\circ + \sec^2 45^\circ = 0.$

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50. Prove that :

$$\sin(2 \times 30^\circ) = \frac{2\tan 30^\circ}{1 + \tan^2 30^\circ}$$

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51. Prove that :

$$\cos(2 \times 30^\circ) = \frac{1 - \tan^2 30^\circ}{1 + \tan^2 30^\circ}$$

Watch Video Solution

52. Prove that :

$$\tan(2 \times 30^\circ) = \frac{2\tan 30^\circ}{1 - \tan^2 30^\circ}$$

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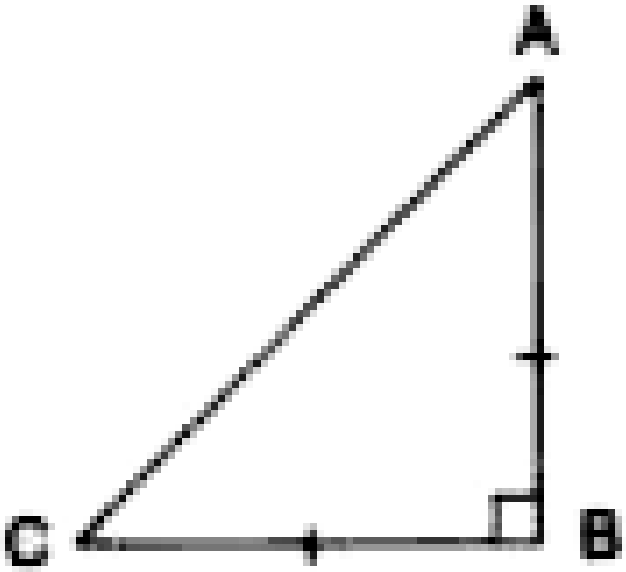
53. ABC is an isosceles right-angled triangle. Assuming AB = BC = x, find the value of each of the following trigonometric ratios :



(i) $\sin 45^\circ$

(ii) $\cos 45^\circ$

(iii) $\tan 45^\circ$

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54. Prove that :

$\sin 60^\circ = 2\sin 30^\circ \cos 30^\circ$.

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55. Prove that :

$4\left(\sin^4 30^\circ + \cos^4 60^\circ\right) - 3\left(\cos^2 45^\circ - \sin^2 90^\circ\right) = 2$

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56. If $\sin x = \cos x$ and x is acute, state the value of x.

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57. If $\sec A = \operatorname{cosec} A \quad \text{and} \quad 0^\circ \leq A \leq 90^\circ$, state the value of A.

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58. If $\tan\theta = \cot\theta \quad \text{and} \quad 0^\circ \leq \theta \leq 90^\circ$, state the value of θ.

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59. If $\sin x = \cos y$, write the relation between x and y, if both the angles x and y are acute.

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60. If $\sin x = \cos y$, then $x + y = 45^\circ$, write true or false.

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61. $\sec\theta.\ \cot\theta = \cos ec\theta$, write true or false.

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62. For any angle θ, state the value of :

$$\sin^2\theta + \cos^2\theta.$$

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63. State for any acute angle θ whether :

$\sin\theta$ increases or decreases as θ increases.

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64. State for any acute angle θ whether :

$\cos\theta$ increases or decreases as θ increases.

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65. State for any acute angle θ whether :

$\tan\theta$ increases or decreases as θ decreases.

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66. If $\sqrt{3} = 1 \cdot 732$, find (correct to two decimal places) the value of each of the following :

(i) $\sin 60^\circ$ (ii) $\dfrac{2}{\tan 30^\circ}$

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67. Evaluate :

$$\frac{\cos 3A - 3\cos 4A}{\sin 3A + 2\sin 4A}, \quad \text{when} \quad A = 15^\circ.$$

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68. Evaluate :

$$\frac{3\sin 3B + 2\cos(2B + 5^\circ)}{2\cos 3B - \sin(2B - 10^\circ)},$$

when $B = 20^\circ$.

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Exercise 23 B

1. Given $A = 60^\circ$ and $B = 30^\circ$, prove that :

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

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2. Given $A = 60^\circ$ and $B = 30^\circ$, prove that :

$\cos(A + B) = \cos A \cos B - \sin A \sin B$

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3. Given $A = 60^\circ$ and $B = 30^\circ$, prove that :

$\cos(A - B) = \cos A \cos B + \sin A \sin B$

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4. Given $A = 60^\circ$ and $B = 30^\circ$, prove that :

$\tan(A - B) = \dfrac{\tan A - \tan B}{1 + \tan A . \tan B}$

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5. If $A = 30^\circ$, then prove that :

$$\sin 2A = 2\sin A \cos A = \frac{2\tan A}{1+\tan^2 A}$$

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6. If $A = 30^\circ$, then prove that :

$$\cos 2A = \cos^2 A - \sin^2 A$$

$$= \frac{1-\tan^2 A}{1+\tan^2 A}$$

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7. If $A = 30^\circ$, then prove that :

$$2\cos^2 A - 1 = 1 - 2\sin^2 A$$

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8. If $A = 30^\circ$, then prove that :

$\sin 3A = 3 \sin A - 4 \sin^3 A$

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9. If $A = B = 45^\circ$, show that :

$\sin(A - B) = \sin A \cos B - \cos A \sin B$

Watch Video Solution

10. If $A = B = 45^\circ$, show that :

$\cos(A + B) = \cos A \cos B - \sin A \sin B$

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11. If $A = 30^\circ$, show that :

$\sin 3A = 4 \sin A \sin(60^\circ - A) \sin(60^\circ + A)$

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12. If $A = 30^\circ$, show that :

$(\sin A - \cos A)^2 = 1 - \sin 2A$

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13. If $A = 30^\circ$, show that :

$\cos 2A = \cos^4 A - \sin^4 A$

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14. If $A = 30^\circ$, show that :

$$\frac{1 - \cos 2A}{\sin 2A} = \tan A$$

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15. If $A = 30^\circ$, show that :

$$\frac{1 + \sin 2A + \cos 2A}{\sin A + \cos A} = 2\cos A.$$

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16. If $A = 30^\circ$, show that :

$$4\cos A \cos(60^\circ - A) \cdot \cos(60^\circ + A) = \cos 3A$$

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17. If $A = 30^\circ$, show that :

$$\frac{\cos^3 A - \cos 3A}{\cos A} + \frac{\sin^3 A + \sin 3A}{\sin A} = 3$$

Watch Video Solution

18. Given $A = 60^\circ$ and $B = 30^\circ$, prove that :

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

Watch Video Solution

19. Given $A = 60^\circ$ and $B = 30^\circ$, prove that :

$$\cos(A + B) = \cos A \cos B - \sin A \sin B$$

Watch Video Solution

20. Given $A = 60^\circ$ and $B = 30^\circ$, prove that :

$\cos(A - B) = \cos A \cos B + \sin A \sin B$

Watch Video Solution

21. Given $A = 60^\circ$ and $B = 30^\circ$, prove that :

$\tan(A - B) = \dfrac{\tan A - \tan B}{1 + \tan A . \tan B}$

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22. If $A = 30^\circ$, then prove that :

$\sin 2A = 2 \sin A \cos A = \dfrac{2 \tan A}{1 + \tan^2 A}$

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23. If $A = 30^\circ$, then prove that :

$$\cos 2A = \cos^2 A - \sin^2 A$$

$$= \frac{1 - \tan^2 A}{1 + \tan^2 A}$$

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24. If $A = 30^\circ$, then prove that :

$$2\cos^2 A - 1 = 1 - 2\sin^2 A$$

Watch Video Solution

25. If $A = 30^\circ$, then prove that :

$$\sin 3A = 3\sin A - 4\sin^3 A$$

Watch Video Solution

26. If $A = B = 45^\circ$, show that :

$\sin(A - B) = \sin A \cos B - \cos A \sin B$

Watch Video Solution

27. If $A = B = 45^\circ$, show that :

$\cos(A + B) = \cos A \cos B - \sin A \sin B$

Watch Video Solution

28. If $A = 30^\circ$, show that :

$\sin 3A = 4 \sin A \sin(60^\circ - A) \sin(60^\circ + A)$

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29. If $A = 30^\circ$, show that :

$(\sin A - \cos A)^2 = 1 - \sin 2A$

Watch Video Solution

30. If $A = 30^\circ$, show that :

$\cos 2A = \cos^4 A - \sin^4 A$

Watch Video Solution

31. If $A = 30^\circ$, show that :

$\frac{1 - \cos 2A}{\sin 2A} = \tan A$

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32. If $A = 30^\circ$, show that :

$$\frac{1 + \sin 2A + \cos 2A}{\sin A + \cos A} = 2\cos A.$$

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33. If $A = 30^\circ$, show that :

$$4\cos A \cos(60^\circ - A) \cdot \cos(60^\circ + A) = \cos 3A$$

Watch Video Solution

34. If $A = 30^\circ$, show that :

$$\frac{\cos^3 A - \cos 3A}{\cos A} + \frac{\sin^3 A + \sin 3A}{\sin A} = 3$$

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Exercise 23 C

1. Solve the following equations for A, if :

$2 \sin A = 1$

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2. Solve the following equations for A, if :

$2 \cos 2A = 1$

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3. Solve the following equations for A, if :

$\sin 3A = \frac{\sqrt{3}}{2}$

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4. Solve the following equations for A, if :

$\sec 2A = 2$

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5. Solve the following equations for A, if :

$\sqrt{3}\tan A = 1$

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6. Solve the following equations for A, if :

$\tan 3A = 1$

Watch Video Solution

7. Solve the following equations for A, if :

$2 \sin 3A = 1$

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8. Solve the following equations for A, if :

$\sqrt{3} \cot 2A = 1$

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9. Calculate the value of A, if :

$(\sin A - 1)(2 \cos A - 1) = 0$

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10. Calculate the value of A, if :

$(\tan A - 1)(\cos ec 3A - 1) = 0$

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11. Calculate the value of A, if :

$(\sec 2A - 1)(\cos ec 3A - 1) = 0$

Watch Video Solution

12. Calculate the value of A, if :

$\cos 3A.\,(2\sin 2A - 1) = 0$

Watch Video Solution

13. Calculate the value of A, if :

$(\cos ec2A - 2)(\cot 3A - 1) = 0$

Watch Video Solution

14. If $2\sin x^\circ - 1 = 0$ and x° is an acute angle, find:

(i) $\sin x^\circ$ (ii) x° (iii) $\cos x^\circ$ and $\tan x^\circ$.

Watch Video Solution

15. If $4\cos^2 x^\circ - 1 = 0$ and $0 \leq x^\circ \leq 90^\circ$, find :

x°

Watch Video Solution

16. If $4\cos^2 x^\circ - 1 = 0$ and $0 \leq x^\circ \leq 90^\circ$, find :

$\sin^2 x^\circ + \cos^2 x^\circ$

Watch Video Solution

17. If $4\cos^2 x^\circ - 1 = 0$ and $0 \leq x^\circ \leq 90^\circ$, find :

$\frac{1}{\cos^2 x^\circ} - \tan^2 x^\circ$

Watch Video Solution

18. If $4\sin^2 \theta - 1 = 0$ and angle θ is less than 90°, find the value of θ and hence the value of $\cos^2 \theta + \tan^2 \theta$.

Watch Video Solution

19. If $\sin 3A = 1$ and $0 \leq A \leq 90^\circ$, find :

sin A

Watch Video Solution

20. If $\sin 3A = 1$ and $0 \leq A \leq 90^\circ$, find :

$\cos 2A$

Watch Video Solution

21. If $\sin 3A = 1$ and $0 \leq A \leq 90^\circ$, find :

$\tan^2 A - \dfrac{1}{\cos^2 A}$

Watch Video Solution

22. If $2\cos 2A = \sqrt{3}$ and A is acute, find :

A

Watch Video Solution

23. If $2\cos 2A = \sqrt{3}$ and A is acute, find :

sin 3A

Watch Video Solution

24. If $2\cos 2A = \sqrt{3}$ and A is acute, find :

$\sin^2(75^\circ - A) + \cos^2(45^\circ + A)$

Watch Video Solution

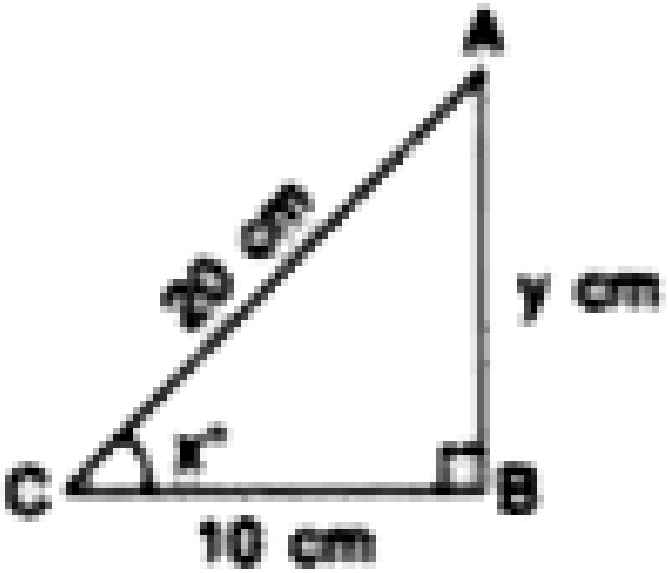
25. If $\sin x + \cos y = 1$ and $x = 30^\circ$, find the value of y.

Watch Video Solution

26. If $3\tan A - 5\cos B = \sqrt{3}$ and $B = 90^\circ$, find the value of A.

Watch Video Solution

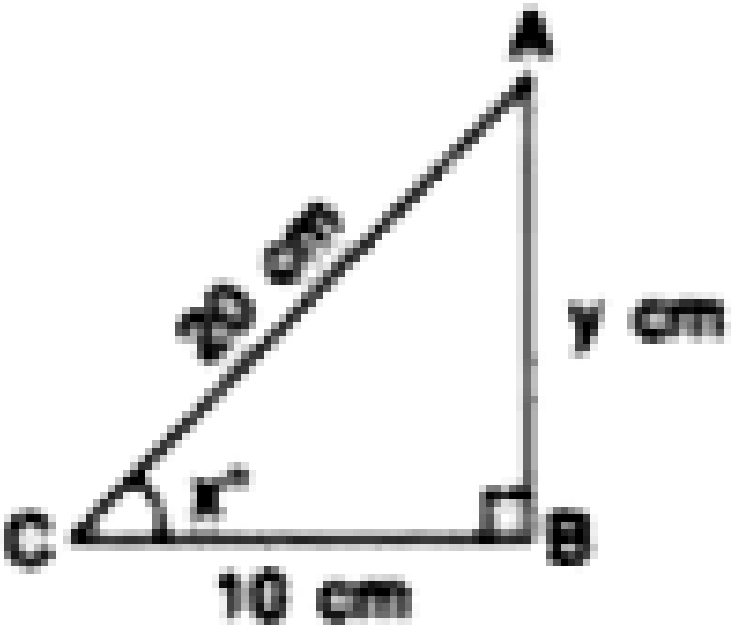
27. From the given figure, find :



$\cos x^\circ$

Watch Video Solution

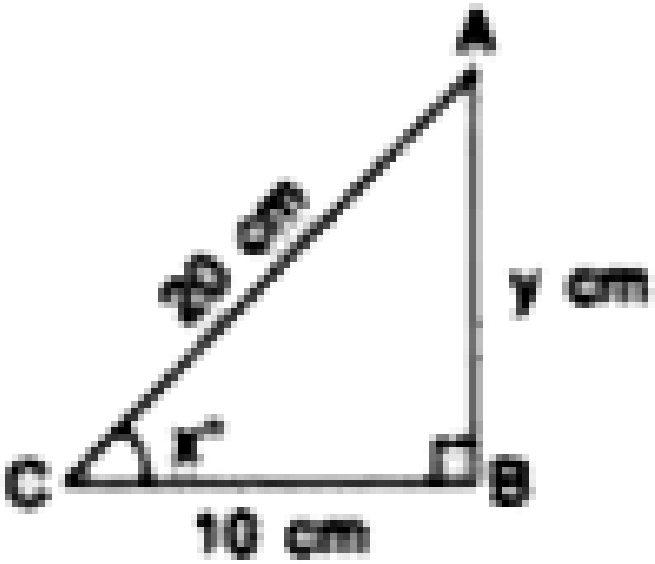
28. From the given figure, find :



x°

Watch Video Solution

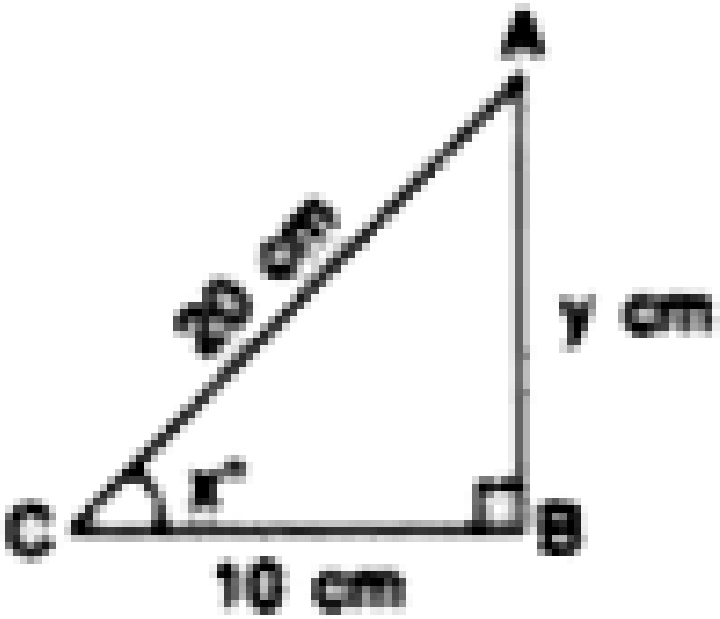
29. From the given figure, find :



$$\frac{1}{\tan^2 x^\circ} - \frac{1}{\sin^2 x^\circ}$$

Watch Video Solution

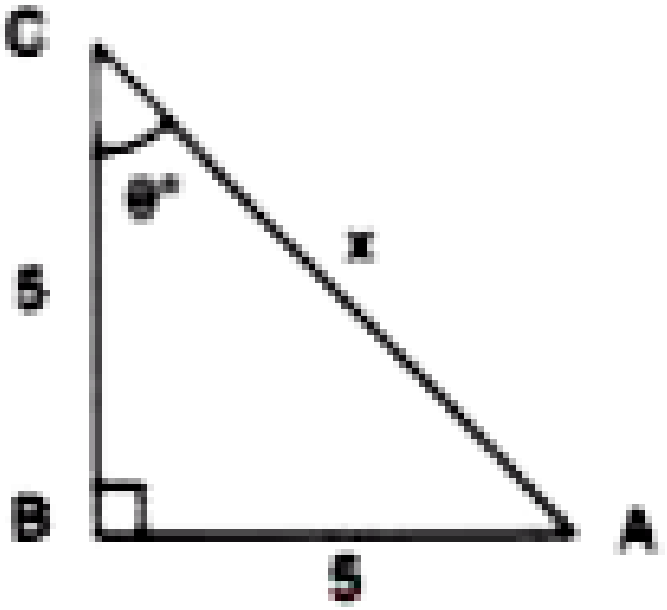
30. From the given figure, find :



Use $\tan x^{\circ}$, to find the value of y.

Watch Video Solution

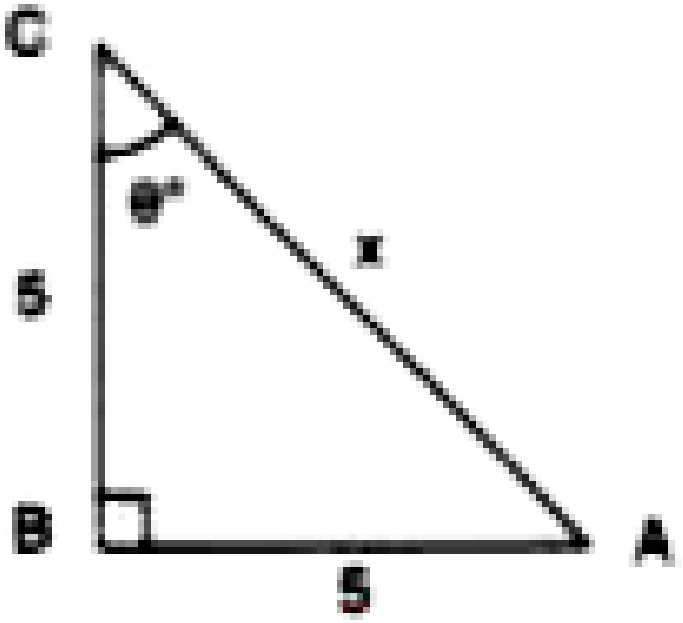
31. Use the given figure to find :



$\tan\theta^\circ$

Watch Video Solution

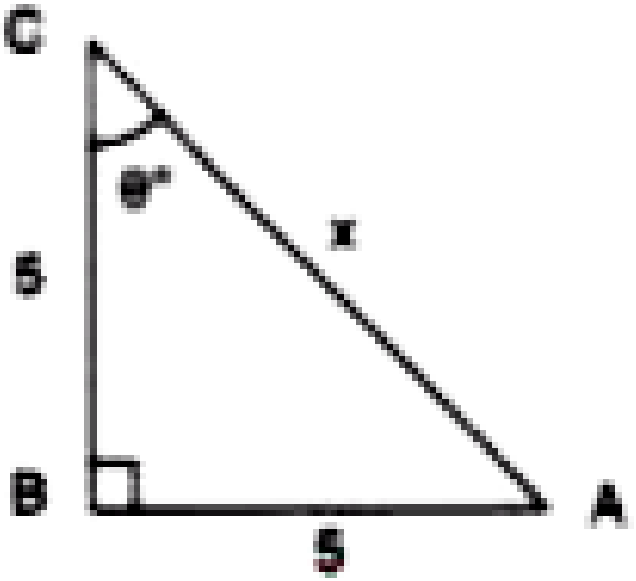
32. Use the given figure to find :



θ°

Watch Video Solution

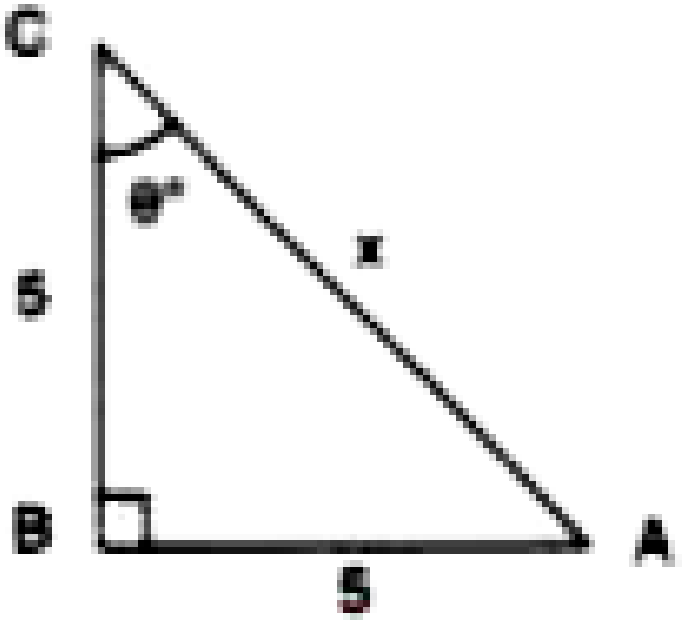
33. Use the given figure to find :



$\sin^2\theta^\circ - \cos^2\theta^\circ$

Watch Video Solution

34. Use the given figure to find :



θ°

Watch Video Solution

35. Find the magnitude of angle A, if :

$2\sin A\cos A - \cos A - 2\sin A + 1 = 0$

Watch Video Solution

36. Find the magnitude of angle A, if :

$\tan A - 2\cos A \tan A + 2\cos A - 1 = 0$

Watch Video Solution

37. Find the magnitude of angle A, if :

$2\cos^2 A - 3\cos A + 1 = 0$

Watch Video Solution

38. Find the magnitude of angle A, if :

$2\tan 3A \cos 3A - \tan 3A + 1 = 2\cos 3A$

Watch Video Solution

39. Solve for x :

$2\cos 3x - 1 = 0$

Watch Video Solution

40. Solve for x :

$\cos \frac{x}{3} - 1 = 0$

Watch Video Solution

41. Solve for x :

$\sin(x + 10^\circ) = \frac{1}{2}$

Watch Video Solution

42. Solve for x :

$\cos(2x - 30^\circ) = 0$

Watch Video Solution

43. Solve for x :

$2\cos(3x - 15^\circ) = 1$

Watch Video Solution

44. Solve for x :

$\tan^2(x - 5^\circ) = 3$

Watch Video Solution

45. Solve for x :

$3\tan^2(2x - 20^\circ) = 1$

Watch Video Solution

46. Solve for x :

$\cos\left(\frac{x}{2} + 10^\circ\right) = \frac{\sqrt{3}}{2}$

Watch Video Solution

47. Solve for x :

$\sin^2 x + \sin^2 30^\circ = 1$

Watch Video Solution

48. Solve for x :

$\cos^2 30^\circ + \cos^2 x = 1$

Watch Video Solution

49. Solve for x :

$\cos^2 30^\circ + \sin^2 2x = 1$

Watch Video Solution

50. Solve for x :

$\sin^2 60^\circ + \cos^2(3x - 9^\circ) = 1$

Watch Video Solution

51. If $4\cos^2 x = 3$ and x is an acute angle, find the value of :

x

Watch Video Solution

52. If $4\cos^2 x = 3$ and x is an acute angle, find the value of :

$\cos^2 x + \cot^2 x$

Watch Video Solution

53. If $4\cos^2 x = 3$ and x is an acute angle, find the value of :

$\cos 3x$

Watch Video Solution

54. If $4\cos^2 x = 3$ and x is an acute angle, find the value of :

$\sin 2x$

Watch Video Solution

55. In $\Delta ABC, \angle B = 90^\circ), AB = y$ units, $BC = \sqrt{3}$ units, AC = 2 units and angle $A = x^\circ$, find :

$\sin x^\circ$

Watch Video Solution

56. In $\Delta ABC, \angle B = 90^\circ), AB = y$ units, $BC = \sqrt{3}$ units, AC = 2 units and angle $A = x^\circ$, find :

x°

Watch Video Solution

57. In $\Delta ABC, \angle B = 90^\circ), AB = y$ units, $BC = \sqrt{3}$ units, AC = 2 units and angle $A = x^\circ$, find :

$\tan x^\circ$

Watch Video Solution

58. In $\Delta ABC, \angle B = 90^\circ), AB = y$ units, $BC = \sqrt{3}$ units, AC = 2 units and angle $A = x^\circ$, find :

use $\cos x^\circ$ to find the value of y.

Watch Video Solution

59. If $2\cos(A + B) = 2\sin(A - B) = 1$, find the values of A and B.

Watch Video Solution

60. Solve the following equations for A, if :

$2 \sin A = 1$

Watch Video Solution

61. Solve the following equations for A, if :

$2 \cos 2A = 1$

Watch Video Solution

62. Solve the following equations for A, if :

$\sin 3A = \frac{\sqrt{3}}{2}$

Watch Video Solution

63. Solve the following equations for A, if :

$\sec 2A = 2$

Watch Video Solution

64. Solve the following equations for A, if :

$\sqrt{3}\tan A = 1$

Watch Video Solution

65. Solve the following equations for A, if :

$\tan 3A = 1$

Watch Video Solution

66. Solve the following equations for A, if :

$2 \sin 3A = 1$

Watch Video Solution

67. Solve the following equations for A, if :

$\sqrt{3} \cot 2A = 1$

Watch Video Solution

68. Calculate the value of A, if :

$(\sin A - 1)(2 \cos A - 1) = 0$

Watch Video Solution

69. Calculate the value of A, if :

$(\tan A - 1)(\cos ec 3A - 1) = 0$

Watch Video Solution

70. Calculate the value of A, if :

$(\sec 2A - 1)(\cos ec 3A - 1) = 0$

Watch Video Solution

71. Calculate the value of A, if :

$\cos 3A.\,(2\sin 2A - 1) = 0$

Watch Video Solution

72. Calculate the value of A, if :

$(\cos ec2A - 2)(\cot 3A - 1) = 0$

Watch Video Solution

73. If $2\sin x^\circ - 1 = 0$ and x° is an acute angle, find:

(i) $\sin x^\circ$ (ii) x° (iii) $\cos x^\circ$ and $\tan x^\circ$.

Watch Video Solution

74. If $4\cos^2 x^\circ - 1 = 0$ and $0 \leq x^\circ \leq 90^\circ$, find :

x°

Watch Video Solution

75. If $4\cos^2 x(\circ) - 1 = 0$ and $0 \leq x^\circ \leq 90^\circ$, find :

$\sin^2 x^\circ + \cos^2 x^\circ$

Watch Video Solution

76. If $4\cos^2 x(\circ) - 1 = 0$ and $0 \leq x^\circ \leq 90^\circ$, find :

$\frac{1}{\cos^2 x^\circ} - \tan^2 x^\circ$

Watch Video Solution

77. If $4\sin^2\theta - 1 = 0$ and angle θ is less than 90°, find the value of θ and hence the value of $\cos^2\theta + \tan^2\theta$.

Watch Video Solution

78. If $\sin 3A = 1$ and $0 \leq A \leq 90^\circ$, find :

sin A

Watch Video Solution

79. If $\sin 3A = 1$ and $0 \leq A \leq 90^\circ$, find :

$\cos 2A$

Watch Video Solution

80. If $\sin 3A = 1$ and $0 \leq A \leq 90^\circ$, find :

$\tan^2 A - \dfrac{1}{\cos^2 A}$

Watch Video Solution

81. If $2\cos 2A = \sqrt{3}$ and A is acute, find :

A

Watch Video Solution

82. If $2\cos 2A = \sqrt{3}$ and A is acute, find :

sin 3A

Watch Video Solution

83. If $2\cos 2A = \sqrt{3}$ and A is acute, find :

$\sin^2(75^\circ - A) + \cos^2(45^\circ + A)$

Watch Video Solution

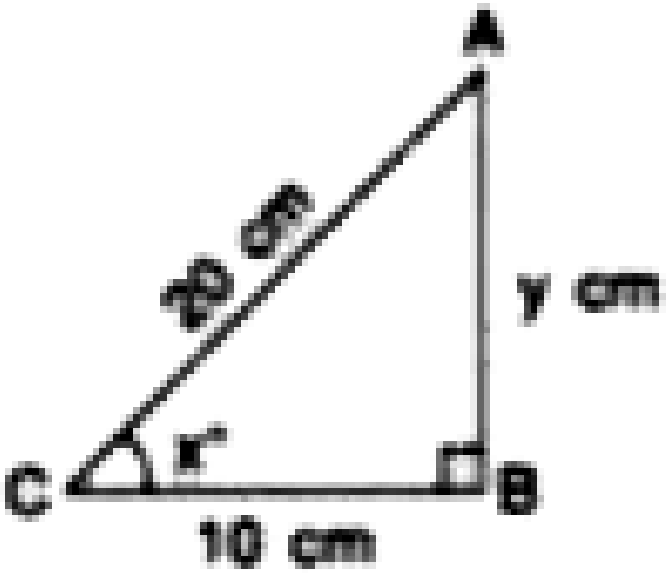
84. If $\sin x + \cos y = 1$ and $x = 30^\circ$, find the value of y.

Watch Video Solution

85. If $3\tan A - 5\cos B = \sqrt{3}$ and $B = 90^\circ$, find the value of A.

Watch Video Solution

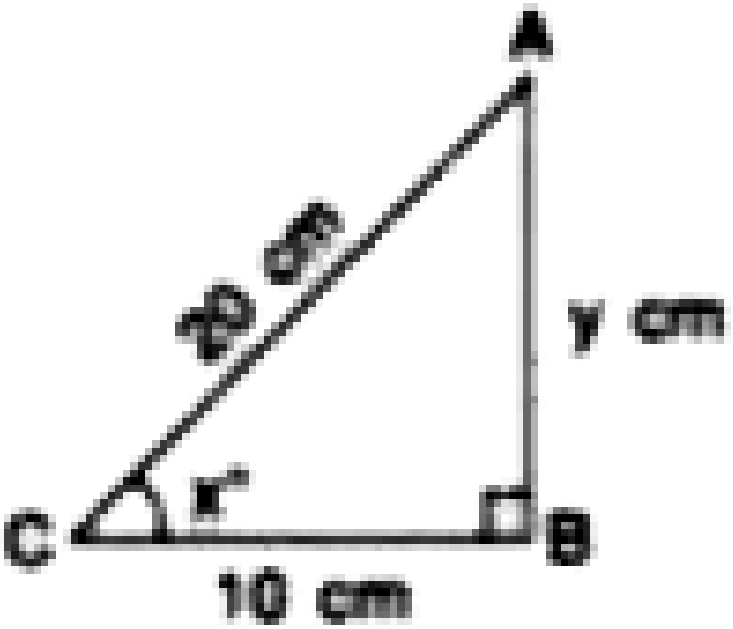
86. From the given figure, find :



$\cos x^\circ$

Watch Video Solution

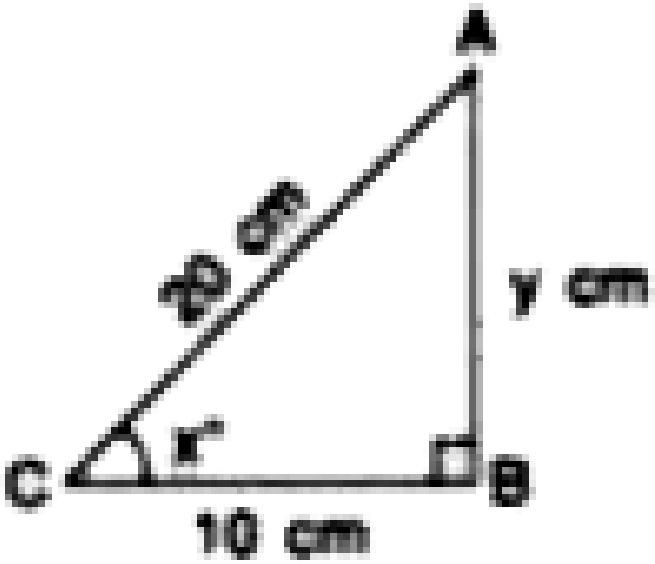
87. From the given figure, find :



x°

Watch Video Solution

88. From the given figure, find :



$$\frac{1}{\tan^2 x^\circ} - \frac{1}{\sin^2 x^\circ}$$

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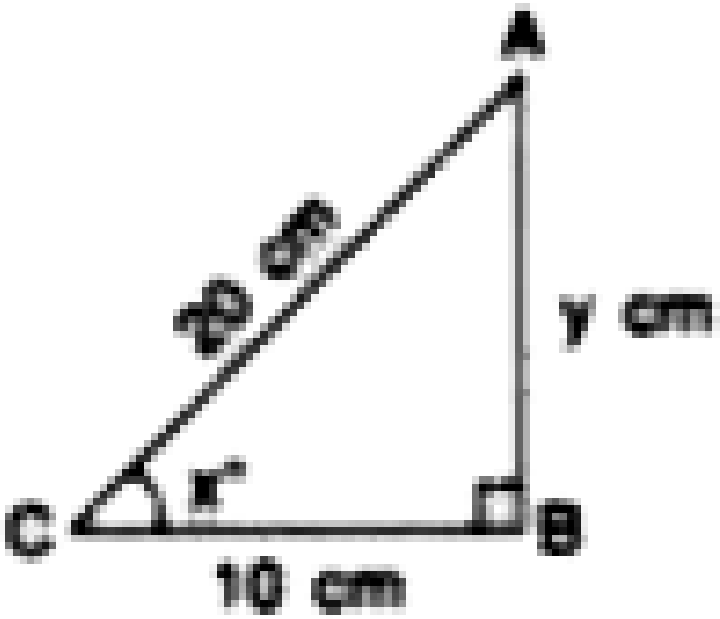
89. From the given figure, find :



Use $\tan x^\circ$, to find the value of y.

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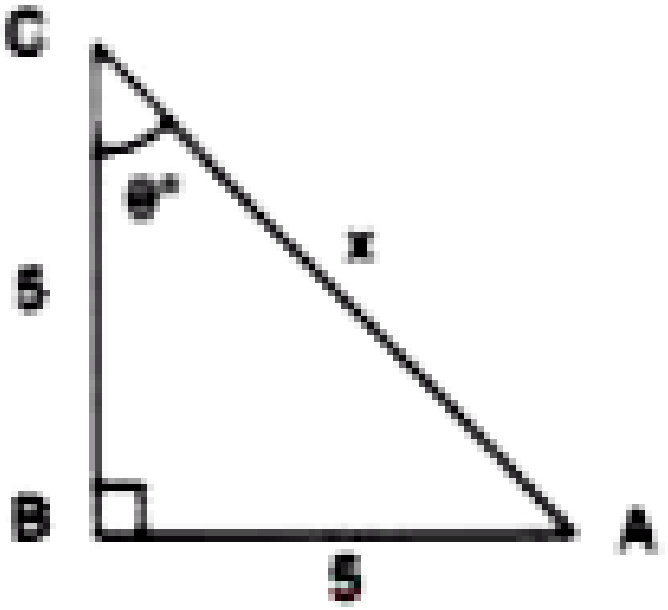
90. Use the given figure to find :



$\tan\theta^\circ$

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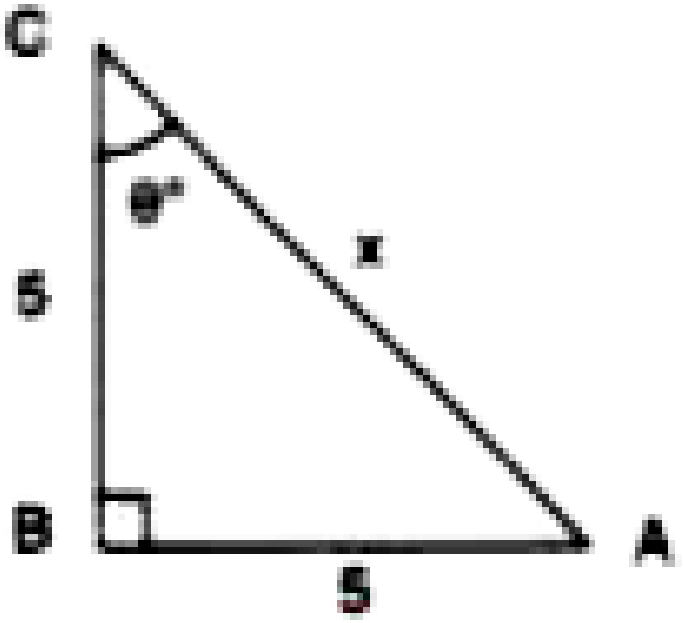
91. Use the given figure to find :



θ°

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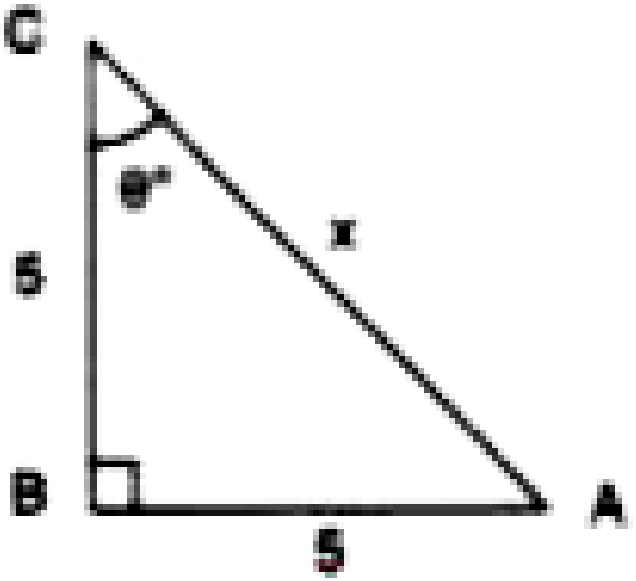
92. Use the given figure to find :



$\sin^2\theta^\circ - \cos^2\theta^\circ$

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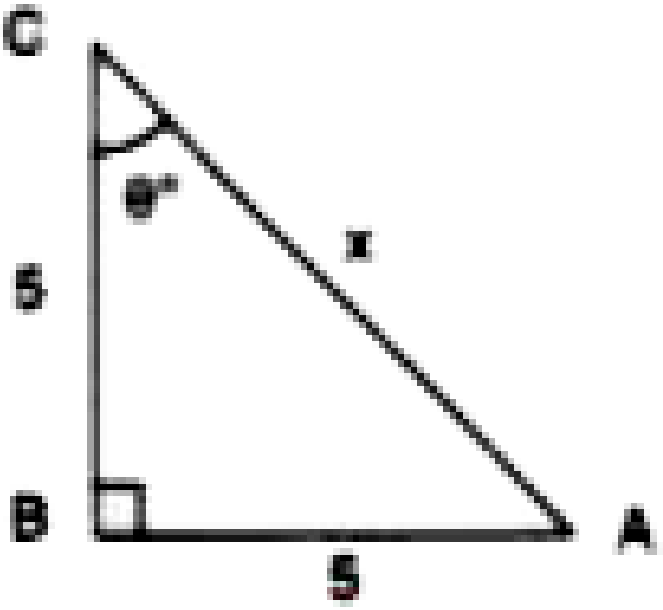
93. Use the given figure to find :



Use $\sin\theta^\circ$ to find the value of x.

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94. Find the magnitude of angle A, if :

$2\sin A\cos A - \cos A - 2\sin A + 1 = 0$

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95. Find the magnitude of angle A, if :

$\tan A - 2\cos A \tan A + 2\cos A - 1 = 0$

Watch Video Solution

96. Find the magnitude of angle A, if :

$2\cos^2 A - 3\cos A + 1 = 0$

Watch Video Solution

97. Find the magnitude of angle A, if :

$2\tan 3A \cos 3A - \tan 3A + 1 = 2\cos 3A$

Watch Video Solution

98. Solve for x :

$2\cos 3x - 1 = 0$

Watch Video Solution

99. Solve for x :

$\cos \frac{x}{3} - 1 = 0$

Watch Video Solution

100. Solve for x :

$\sin(x + 10^\circ) = \frac{1}{2}$

Watch Video Solution

101. Solve for x :

$\cos(2x - 30^\circ) = 0$

Watch Video Solution

102. Solve for x :

$2\cos(3x - 15^\circ) = 1$

Watch Video Solution

103. Solve for x :

$\tan^2(x - 5^\circ) = 3$

Watch Video Solution

104. Solve for x :

$3\tan^2(2x - 20^\circ) = 1$

Watch Video Solution

105. Solve for x :

$\cos\left(\frac{x}{2} + 10^\circ\right) = \frac{\sqrt{3}}{2}$

Watch Video Solution

106. Solve for x :

$\sin^2 x + \sin^2 30^\circ = 1$

Watch Video Solution

107. Solve for x :

$\cos^2 30^\circ + \cos^2 x = 1$

Watch Video Solution

108. Solve for x :

$\cos^2 30^\circ + \sin^2 2x = 1$

Watch Video Solution

109. Solve for x :

$\sin^2 60^\circ + \cos^2(3x - 9^\circ) = 1$

Watch Video Solution

110. If $4\cos^2 x = 3$ and x is an acute angle, find the value of :

x

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111. If $4\cos^2 x = 3$ and x is an acute angle, find the value of :

$\cos^2 x + \cot^2 x$

Watch Video Solution

112. If $4\cos^2 x = 3$ and x is an acute angle, find the value of :

$\cos 3x$

Watch Video Solution

113. If $4\cos^2 x = 3$ and x is an acute angle, find the value of :

$\sin 2x$

Watch Video Solution

114. In $\Delta ABC, \angle B = 90^\circ), AB = y$ units, $BC = \sqrt{3}$ units, AC = 2 units and angle $A = x^\circ$, find :

$\sin x^\circ$

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115. In $\Delta ABC, \angle B = 90^\circ), AB = y$ units, $BC = \sqrt{3}$ units, AC = 2 units and angle $A = x^\circ$, find :

x°

Watch Video Solution

116. In $\Delta ABC, \angle B = 90^\circ), AB = y$ units, $BC = \sqrt{3}$ units, AC = 2 units and angle $A = x^\circ$, find :

x°

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117. In $\Delta ABC, \angle B = 90^\circ), AB = y$ units, $BC = \sqrt{3}$ units, AC = 2 units and angle $A = x^\circ$, find :

use $\cos x^\circ$ to find the value of y.

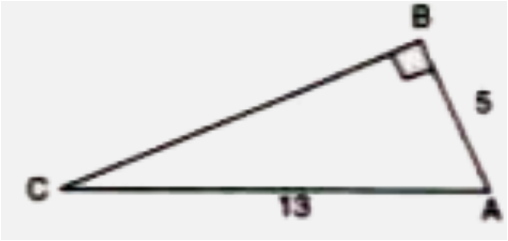
Watch Video Solution

118. If $2\cos(A + B) = 2\sin(A - B) = 1$, find the values of A and B.

Watch Video Solution

Question

1. From the given figure , find :



$\sin A$

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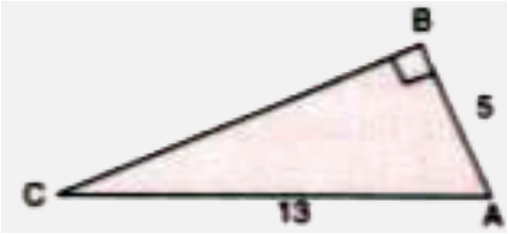
2. From the given figure , find :



cos C

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3. From the given figure , find :

tan A

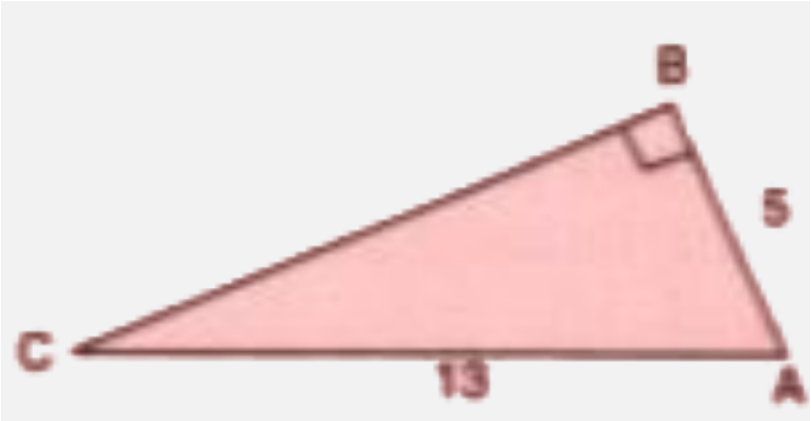
Watch Video Solution

4. From the given figure , find :

$\operatorname{cosec} C$

Watch Video Solution

5. From the given figure , find :



$\sec^2 A - \tan^2 A$

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6. In a right - angled triangle , if angle A is acute and cot $A = \frac{4}{3}$, find the remaning trigonometrical ratios.

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7. Given 13 sin A = 12 , find :

sec A - tan A

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8. Given 13 sin A = 12 , find :

$$\frac{1}{\cos^2 A} - \tan^2 A$$

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9. In the given figure , ABC in a right - angled triangle , right - angled at B. If BC = 5 cm and AC - AB = 1 cm , find the value of cosec A and cos A .

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10. For the given figure, if $\cos\alpha = \frac{5}{13}$ and $\cos\beta = \frac{3}{5}$, find the length of BD.

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11. In a triangle ABC , AP is perpendicular to BC . If BC = 112 cm , cot B $= \frac{4}{3}$ and cot C $= \frac{12}{5}$, calculate the length of AP

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12. In rhombus ABCD , diagonal AC = 18 cm , the angle between diagonal BD and side AB is α such that $\cos\alpha = 0.8$. Find the diagonal BD and the perimeter of rhombus ABCD.

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13. If $\cos\theta = \dfrac{2x}{1+x^2}$, find the values of $\sin\theta$ and $\cot\theta$ [Given $x^2 < 1$]

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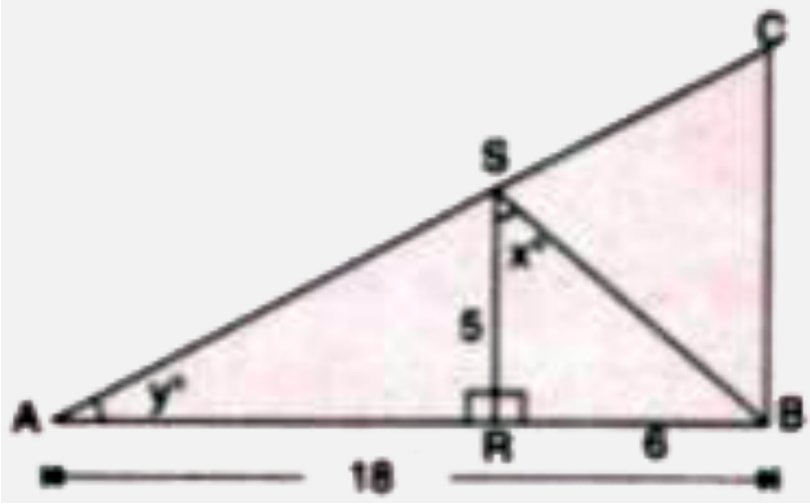
14. From the adjoining figure, find :



$\tan x^\circ$

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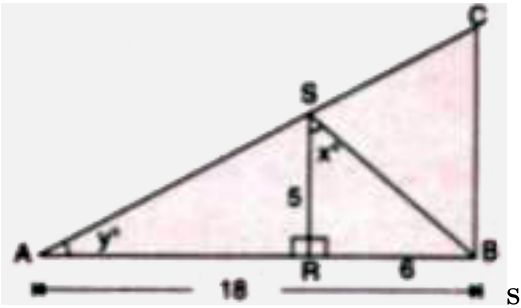
15. From the adjoining figure, find :



$\sin y^\circ$

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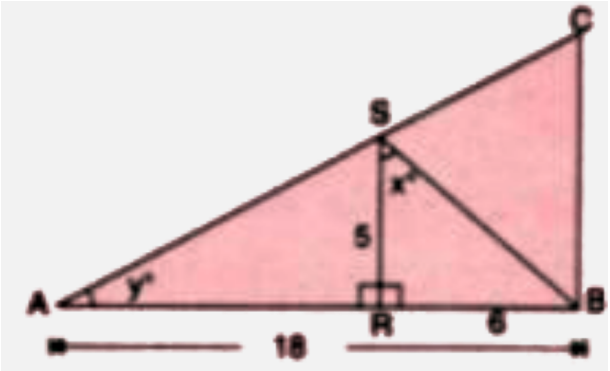
16. From the adjoining figure, find :



$\cos y^\circ$

Watch Video Solution

17. In the adjoining figure, triangle ABC is right - angled at B and BD is perpendicular to AC . Find :

$\cos\angle ABD$

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18. In the adjoining figure, triangle ABC is right - angled at B and BD is perpendicular to AC . Find :

$\angle DBC$

Watch Video Solution

19. In ΔABC, right - angled at B , AC = 20 cm and $\tan\angle ACB = \frac{3}{4}$, calculate the measures of AB and BC.

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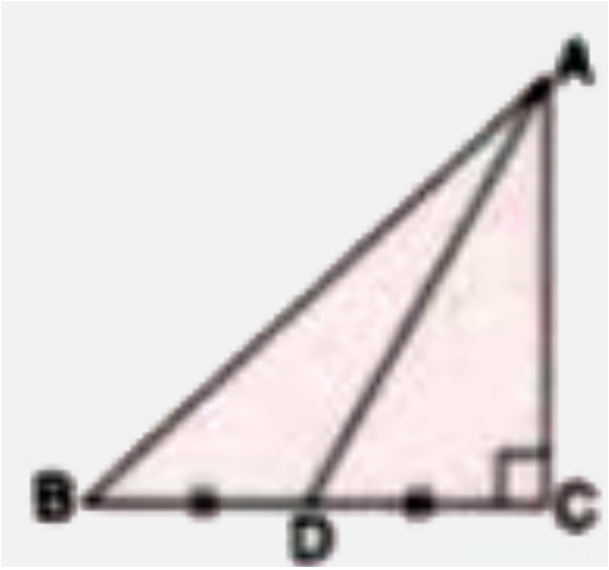
20. If $\tan\theta + \cot\theta = 2$, find the value of $\tan^2\theta + \cot^2\theta$

Watch Video Solution

21. In the given figure, $\angle C = 90^\circ$ and BD = DC Find :



$$\frac{\cot\angle ABC}{\cot\angle ADC}$$

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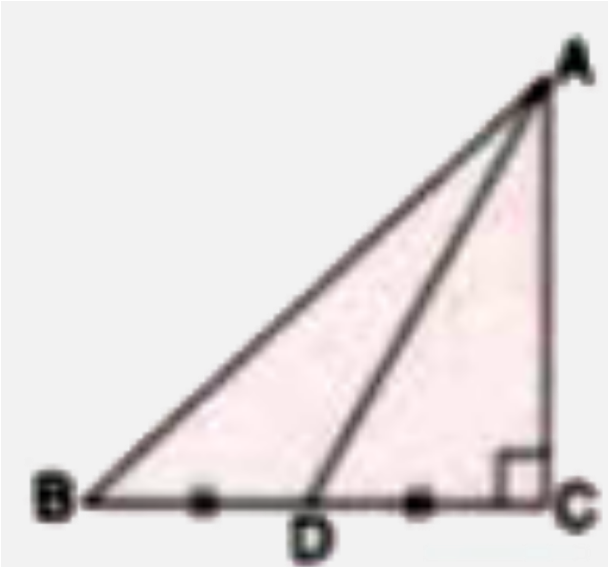
22. In the given figure , $\angle C = 90^\circ$ and BD = DC Find :



$$\frac{\cot \angle DAC}{\cot \angle BAC}$$

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23. If 3 sin A = 4 cos A , find the value of :

sin A

Watch Video Solution

24. If 3 sin A = 4 cos A , find the value of :

cos A

Watch Video Solution

25. If 3 sin A = 4 cos A , find the value of :

$\tan^2 A - \sec^2 A$

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26. If 5 tan $\theta = 4$, find the value of : $\frac{8\sin\theta - 3\cos\theta}{8\sin\theta + 2\cos\theta}$

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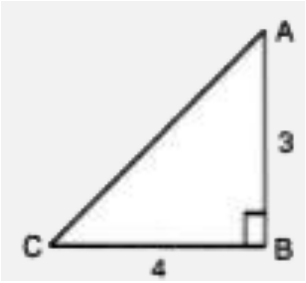
Exercise 22 A

1. From the following figure, find the values of :



sin A

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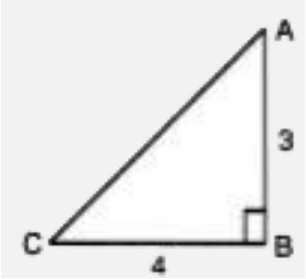
2. From the following figure, find the values of :



cos A

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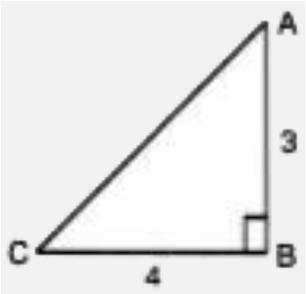
3. From the following figure, find the values of :



cot A

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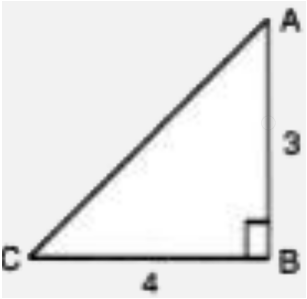
4. From the following figure, find the values of :



sec C

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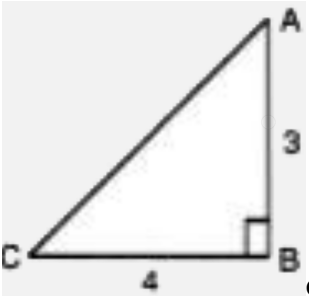
5. From the following figure, find the values of :



cosec C

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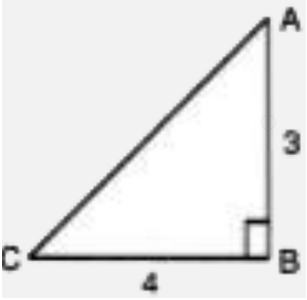
6. From the following figure, find the values of :



tan C

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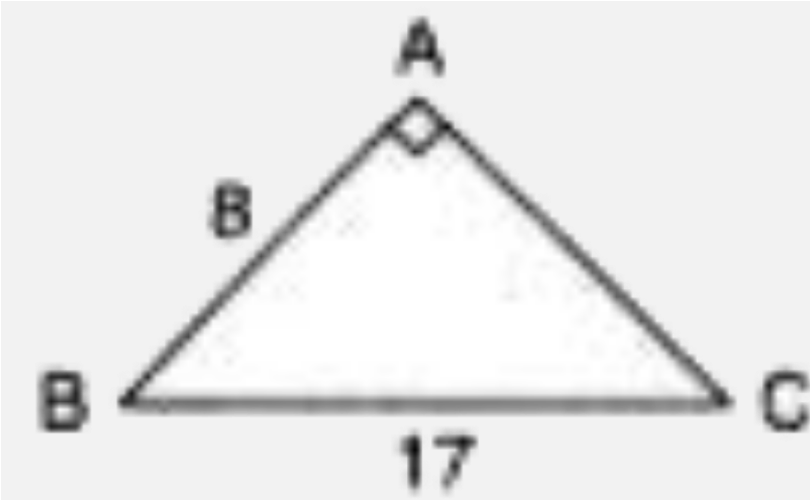
7. From the following figure, find the values of :



cos B

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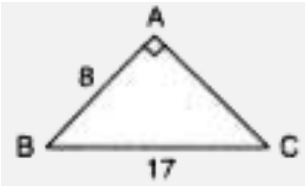
8. From the following figure, find the values of :



tan C

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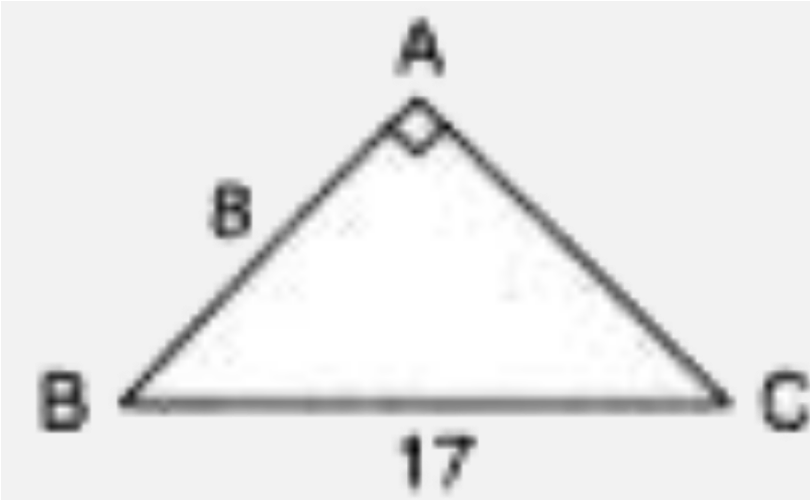
9. From the following figure, find the values of :



$\sin^2 B + \cos^2 B$

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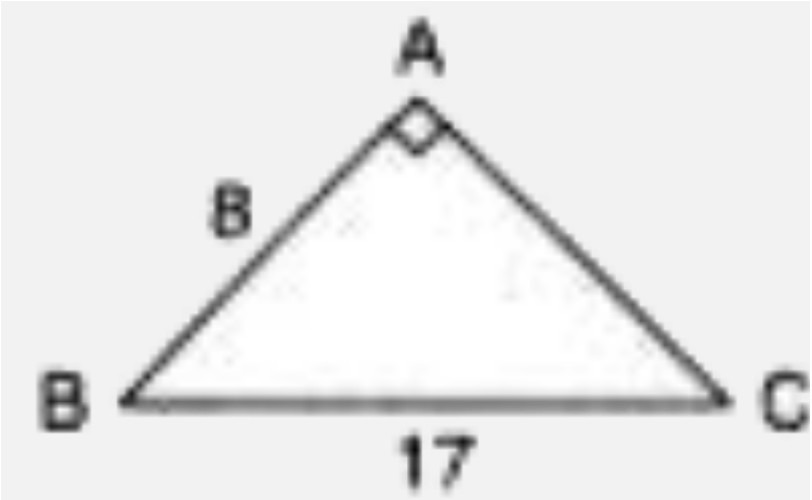
10. From the following figure, find the values of :



$\sin B.\cos C + \cos B.\sin C$

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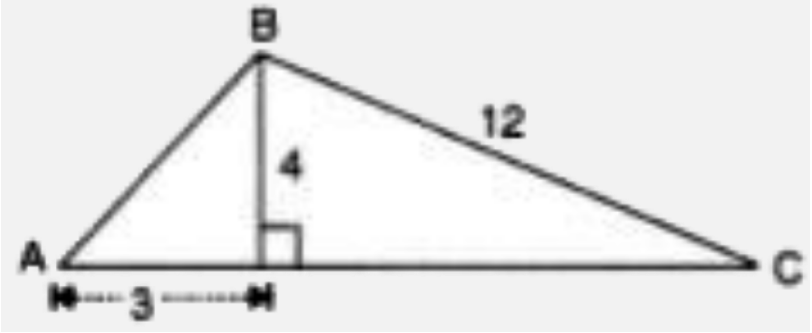
11. From the following figure, find the values of :



cos A

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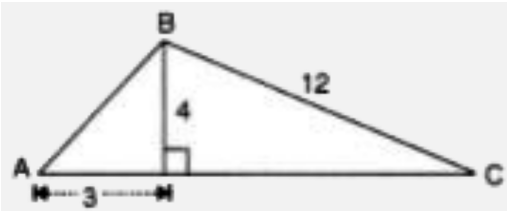
12. From the following figure, find the values of :



cosec A

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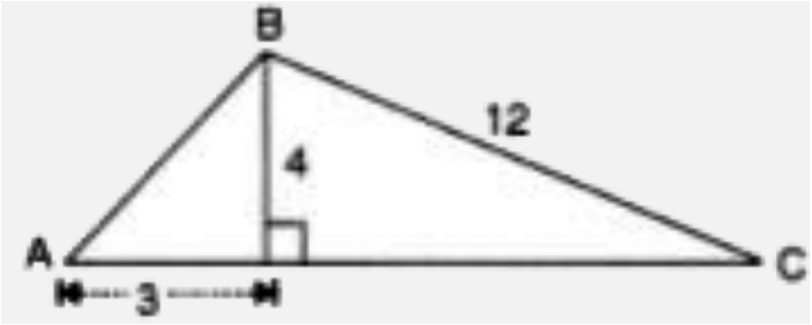
13. From the following figure, find the values of :



$\tan^2 A - \sec^2 A$

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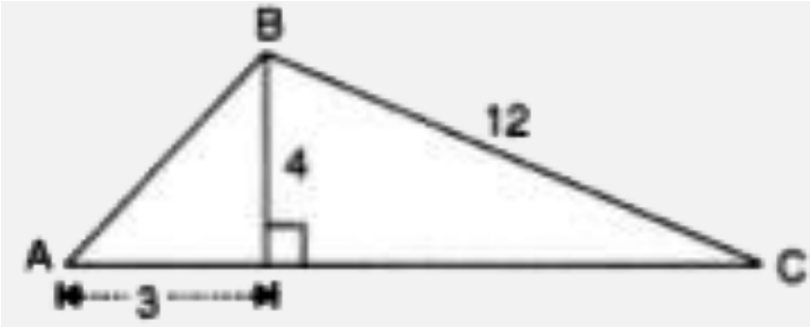
14. From the following figure, find the values of :



sin C

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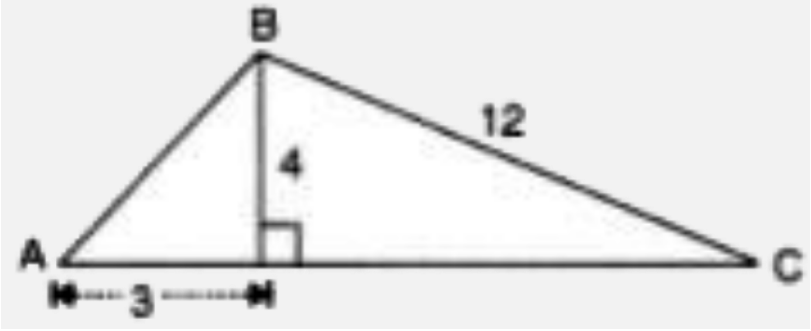
15. From the following figure, find the values of :



sec C

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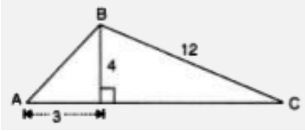
16. From the following figure, find the values of :



$\cot^2 C - \frac{1}{\sin^2 C}$

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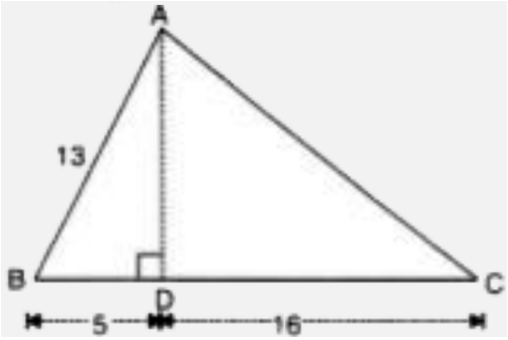
17. From the following figure , find the values of :

sin B



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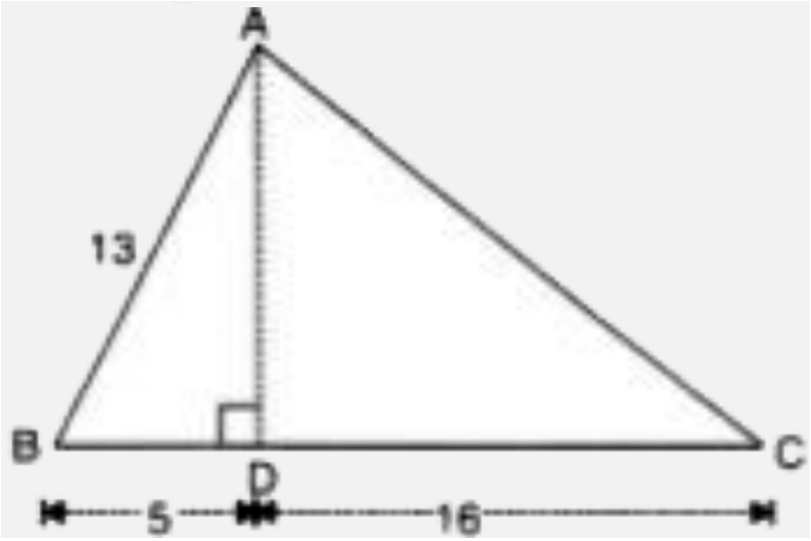
18. From the following figure , find the values of :

tan C



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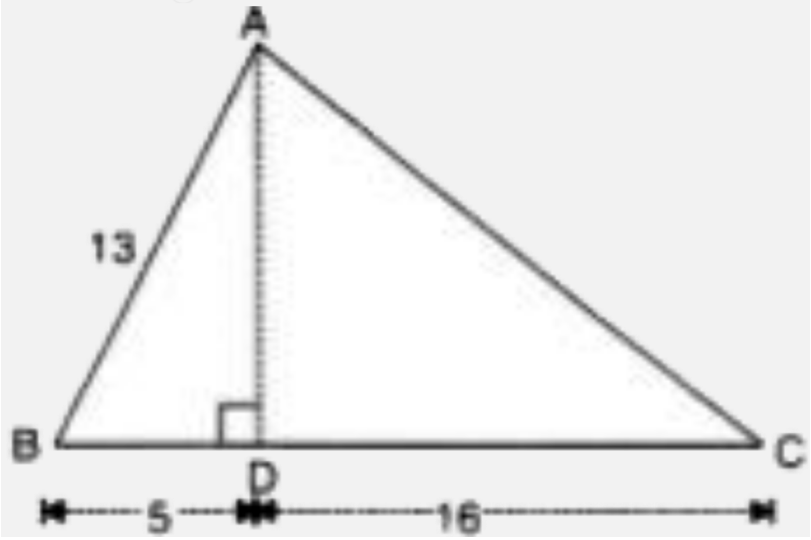
19. From the following figure , find the values of :

$\sec^2 B - \tan^2 B$



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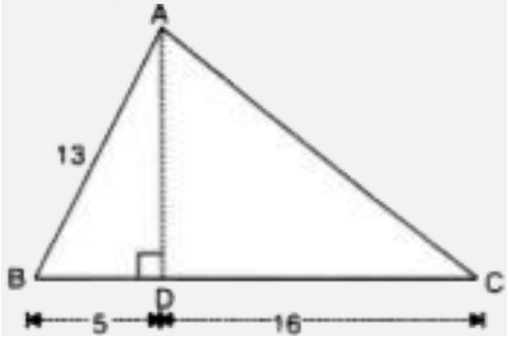
20. From the following figure , find the values of :

$\sin^2 C + \cos^2 C$



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21. Given : $\sin A = \frac{3}{5}$, find :

tan A

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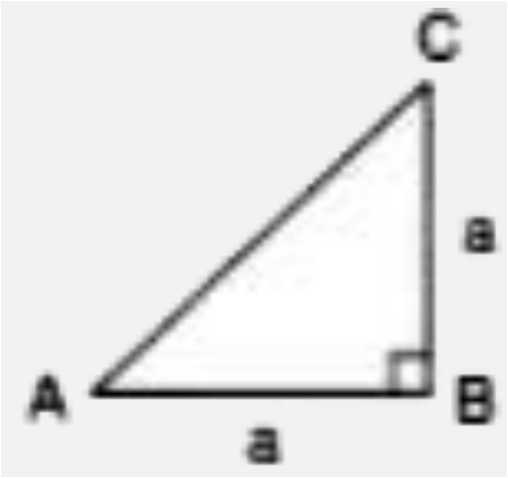
22. Given : $\sin A = \frac{3}{5}$, find :

cos A

Watch Video Solution

23. From the following figure , find the values of :



sin A

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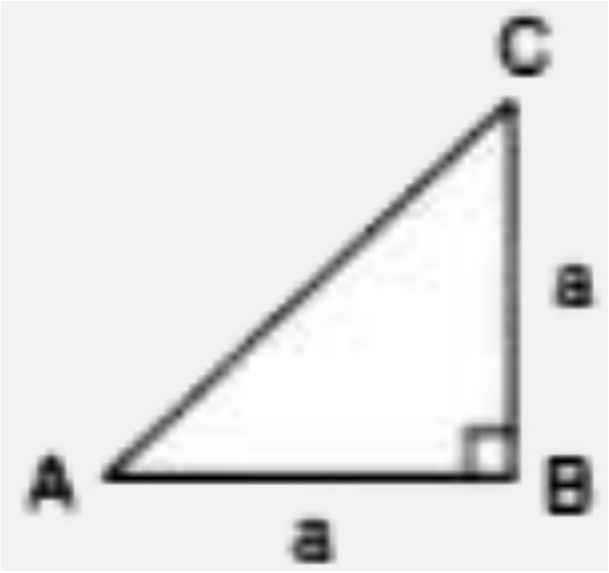
24. From the following figure , find the values of :



sec A

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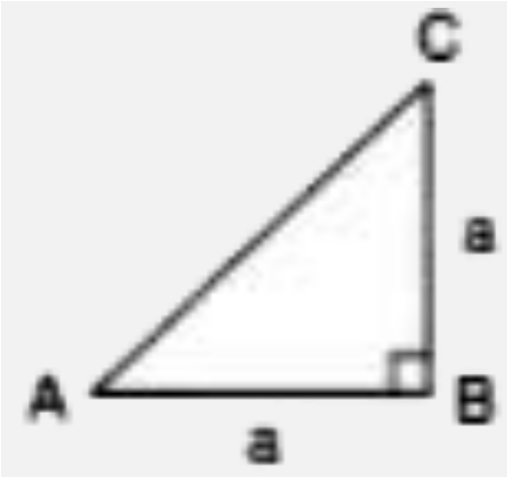
25. From the following figure , find the values of :



$\cos^2 A + \sin^2 A$

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26. Given : $\cos A = \frac{5}{13}$ evaluate :

$$\frac{\sin A - \cot A}{2 \tan A}$$

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27. Given : $\cos A = \frac{5}{13}$ evaluate :

$\cot A + \frac{1}{\cos A}$

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28. Given : $\sec A = \frac{29}{21}$, evaluate : $\sin A - \frac{1}{\tan A}$

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29. Given : $\tan A = \frac{4}{3}$, find : $\frac{\text{cosec} A}{\cot A - \sec A}$

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30. Given : $4 \cot A = 3$, find :

sinA

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31. Given : $4\cot A = 3$, find :

sec A

Watch Video Solution

32. Given : $4\cot A = 3$, find :

$\text{cosec}^2 A - \cot^2 A$

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33. Given : cos A = 0.6 , find all other trigono- metrical ratios for angle A.

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34. In a right - angled triangle , it is given that A is an acute angle and $\tan A = \frac{5}{12}$

cos A

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35. In a right - angled triangle , it is given that A is an acute angle and $\tan A = \frac{5}{12}$

sin A

Watch Video Solution

36. In a right - angled triangle , it is given that A is an acute angle and $\tan A = \frac{5}{12}$

$$\frac{\cos A + \sin A}{\cos A - \sin A}$$

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37. Given : $\sin\theta = \frac{p}{q}$, find $\cos\theta + \sin\theta$ in terms of p and q.

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38. If $\cos A = \frac{1}{2}$ and $\sin B = \frac{1}{\sqrt{2}}$, find the value of : $\frac{\tan A - \tan B}{1 + \tan A \tan B}$: Here angles A and B from different right triangle

.

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39. If 5 $\cot\theta = 12$, find the value of : $\operatorname{cosec}\theta + \sec\theta$

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40. If $\tan x = 1\frac{1}{3}$, find the value of : $4\sin^2 x - 3\cos^2 x + 2$

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41. If $\operatorname{cosec}\theta = \sqrt{5}$, find the value of :

$2 - \sin^2\theta - \cos^2\theta$

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42. If $\operatorname{cosec}\theta = \sqrt{5}$, find the value of :

$$2 + \frac{1}{\sin^2\theta} - \frac{\cos^2\theta}{\sin^2\theta}$$

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43. If $\sec A = \sqrt{2}$, find the value of :

$$\frac{3\cos^2 A + 5\tan^2 A}{4\tan^2 A - \sin^2 A}$$

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44. If $\cot\theta = 1$, find the value of : $5\tan^2\theta + 2\sin^2\theta - 3$

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45. In the following figure ,

$AD \perp BC, AC = 26, CD = 10, BC = 42, \angle DAC = x$ and $\angle B = y$

Find the vlaue of :

cot x

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46. In the following figure ,

$AD \perp BC, AC = 26, CD = 10, BC = 42, \angle DAC = x$ and $\angle B = y$

Find the vlaue of :

$$\frac{1}{\sin^2 y} - \frac{1}{\tan^2 y}$$

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47. In the following figure ,

$AD \perp BC, AC = 26, CD = 10, BC = 42, \angle DAC = x$ and $\angle B = y$

Find the vlaue of :

$$\frac{6}{\cos x} - \frac{5}{\cos y} + 8\tan y.$$

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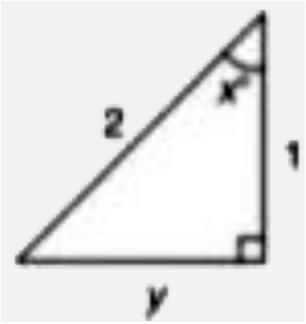
Exercise 22 B

1. From the following figure, find :



y

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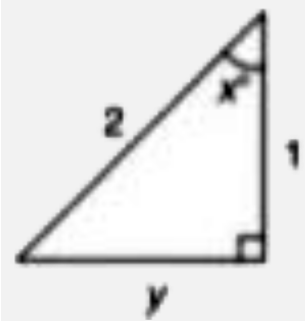
2. From the following figure, find :



$\sin x^{\circ}$

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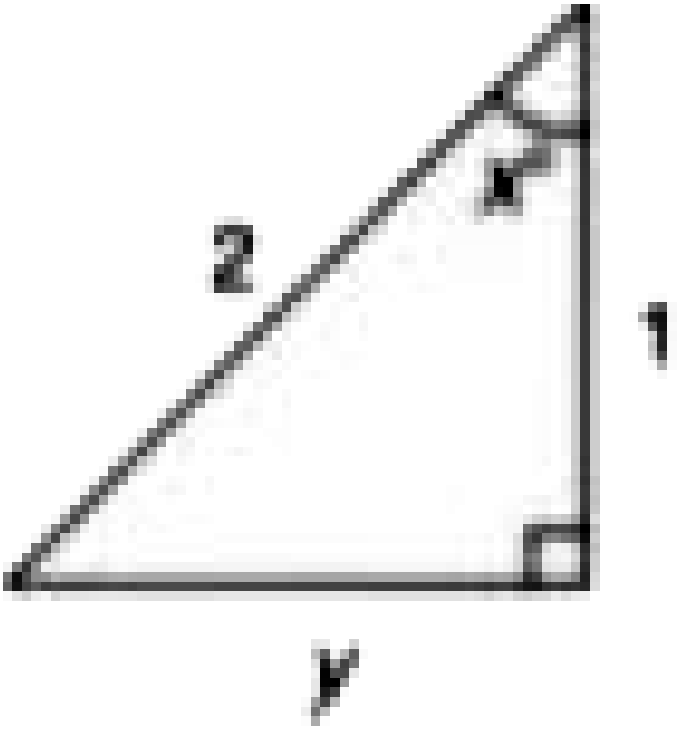
3. From the following figure, find :



$(\sec x^\circ - \tan x^\circ)(\sec x^\circ + \tan x^\circ)$

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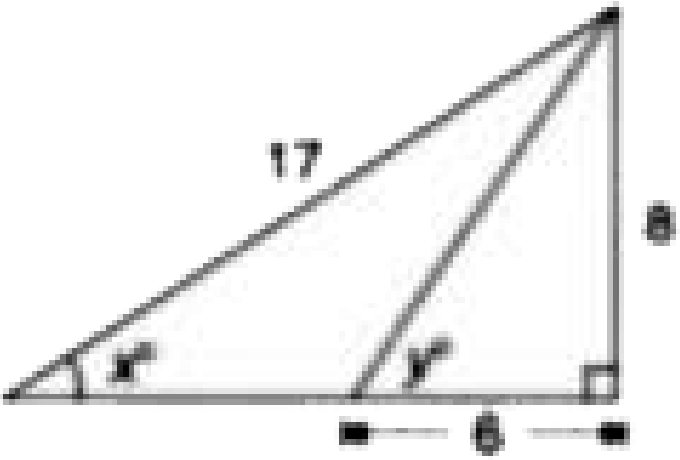
4. Use the given figure to find :



$\sin x^{\circ}$

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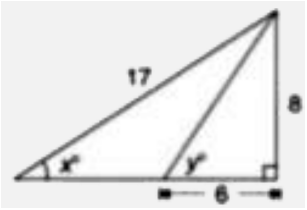
5. Use the given figure to find :



$\cos y^{\circ}$

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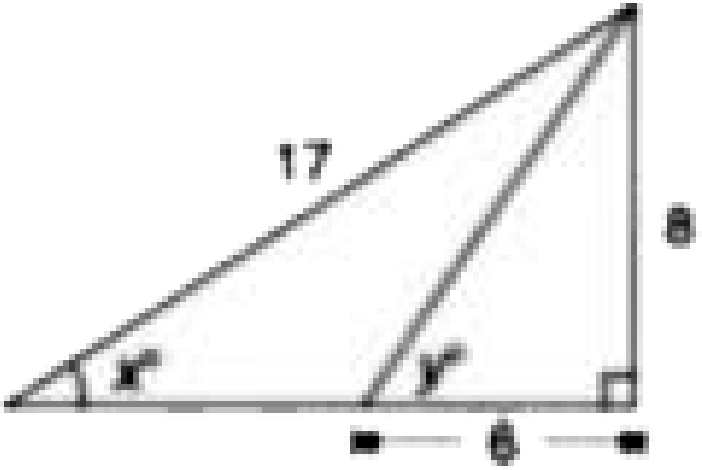
6. Use the given figure to find :



$3\tan^\circ - 2\sin y^\circ + 4\cos y^\circ$

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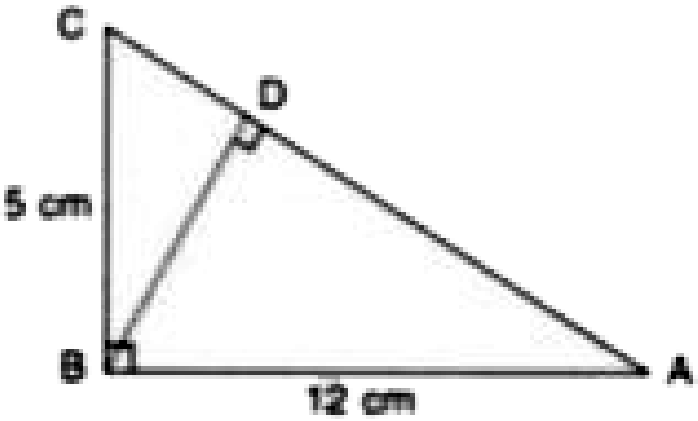
7. In the diagram, given below, triangle ABC is right - angled at B and BD is perpendicular to AC Find :

$\cos\angle DBC$



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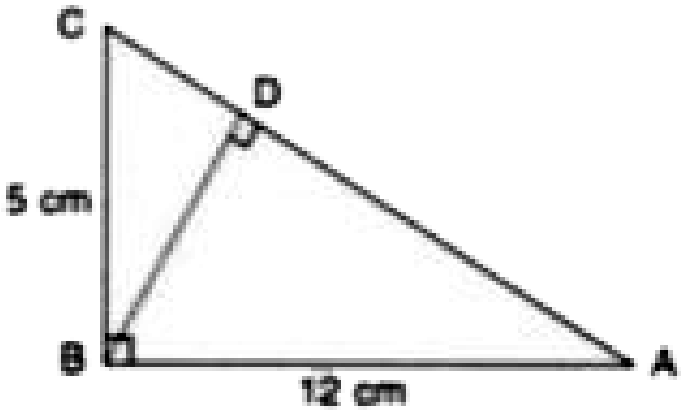
8. In the diagram, given below, triangle ABC is right - angled at B and BD is perpendicular to AC Find :

$\cot \angle DBA$



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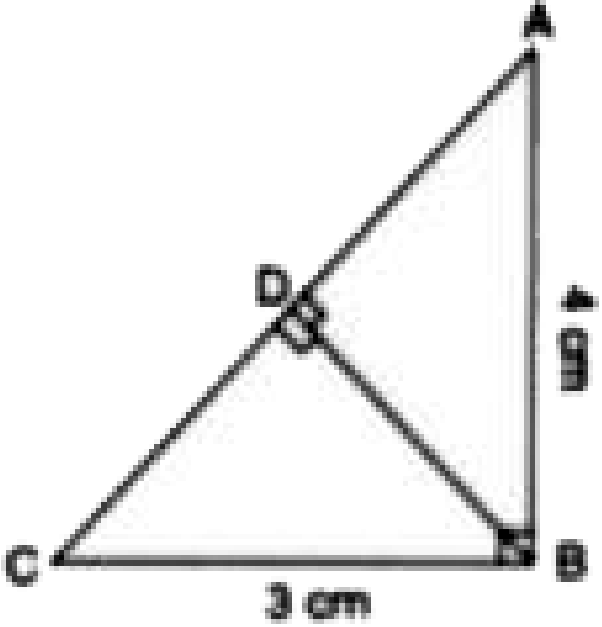
9. In the given figure, triangle ABC is right angled at B. D is the foot of the perpendicular from B to AC. Given that BC = 3 cm and AB = 4 cm. Find :



$\tan\angle DBC$

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10. In the given figure, triangle ABC is right angled at B. D is the foot of the perpendicular from B to AC. Given that BC = 3 cm and AB = 4 cm. Find :

$\sin\angle DBA$

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11. In triangle ABC, AB = AC = 15 cm and BC = 18 cm, find cos $\angle ABC$

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12. In the figure, given below, ABC is an isosceles triangle with BC = 8 cm and AB = AC = 5 cm. Find :

sin B

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13. In the figure, given below, ABC is an isosceles triangle with BC = 8 cm and AB = AC = 5 cm. Find :

tan C

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14. In the figure, given below, ABC is an isosceles triangle with BC = 8 cm and AB = AC = 5 cm. Find :

$\sin^2 B + \cos^2 B$

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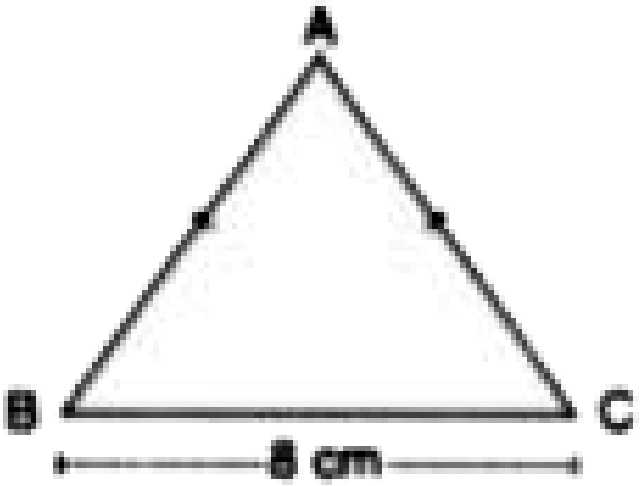
15. In the figure, given below, ABC is an isosceles triangle with BC = 8 cm and AB = AC = 5 cm. Find :



$\tan C - \cot B$

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16. In triangle ABC , $\angle ABC = 90^\circ, \angle CAB = x^\circ, \tan x^\circ = \frac{3}{4}$ and $BC = 15cm$. Find the measures of AB and AC.

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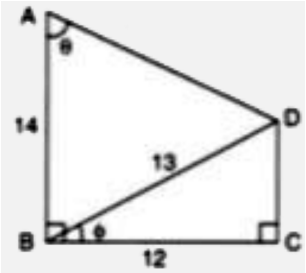
17. Using the measurements given in the following figure :

Find the value of sin ϕ and tan θ



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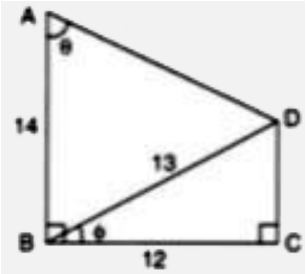
18. Using the measurements given in the following figure :

Write an expression for AD in terms of θ



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19. In the given figure, BC=15 cm and sin B = $\frac{4}{5}$.

Calculate the measures of AB and AC.

Also , show that : $\tan^2 B - \frac{1}{\cos^2 B} = -1$

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20. In the given figure, BC=15 cm and sin B = $\frac{4}{5}$.

Now, if tan $\angle ADC = 1$, calculate the measures of CD and AD.

Also , show that : $\tan^2 B - \frac{1}{\cos^2 B} = -1$

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21. If sin A + cosec A = 2,

find the value of $\sin^2 A + \text{cosec}^2 A$.

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22. If tan A + cot A = 5, find the value of $\tan^2 A + \cot^2 A$.

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23. Given : $4\sin\theta = 3\cos\theta$, find the value of:

$\sin\theta$

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24. Given : $4\sin\theta = 3\cos\theta$, find the value of:

$\cos\theta$

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25. Given : $4\sin\theta = 3\cos\theta$, find the value of:

$\cot^2\theta - \text{cosec}^2\theta$

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26. Given : $4\sin\theta = 3\cos\theta$, find the value of:

$4\cos^2\theta - 3\sin^2\theta + 2$

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27. Given : $17\cos\theta = 15$, find the value of $\tan\theta + 2\sec\theta$.

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28. Given 5 cos A - 12 sin A = 0 , evaluate :

$$\frac{\sin A + \cos A}{2\cos A - \sin A}$$

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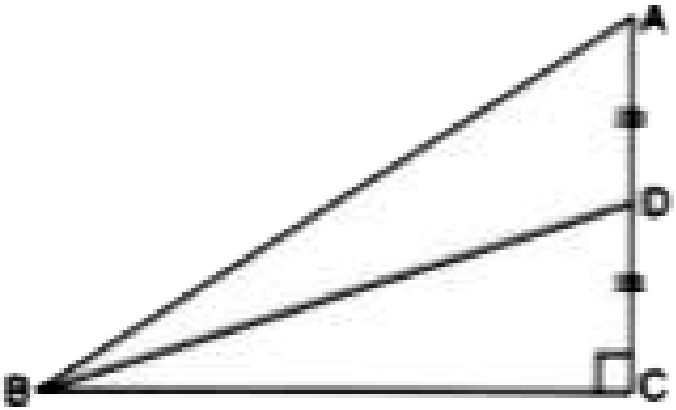
29. In the given figure, $\angle C = 90^\circ$ and D is midpoint of AC. Find :

$$\frac{\tan\angle CAB}{\tan\angle CDB}$$



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30. In the given figure, $\angle C = 90^\circ$ and D is midpoint of AC. Find :

$$\frac{\tan\angle ABC}{\tan\angle DBC}$$

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31. If 3 cos A = 4 sin A, find the value of :

cos A

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32. If 3 cos A = 4 sin A, find the value of :

$3 - \cot^2 A + \text{cosec}^2 A$

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33. In triangle ABC, $\angle B = 90^\circ$ and tan A = 0.75 If AC = 30 cm, find the lengths of AB and BC.

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34. In rhombus ABCD, diagonals AC and BD intersect each other at point O.

If cosine of angle CAB is 0.6 and OB = 8 cm, find the lengths of the side and the diagonals of the rhombus.

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35. In triangle ABC, AB = AC = 15 cm and BC = 18 cm. Find :

cos B

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36. In triangle ABC, AB = AC = 15 cm and BC = 18 cm. Find :

sin C

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37. In triangle ABC, AB = AC = 15 cm and BC = 18 cm. Find :

$\tan^2 B - \sec^2 B + 2$

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38. In triangle ABC, AD is perpendicular to BC. sin B = 0.8, BD = 9 cm and tan C = 1. Find the length of AB, AD, AC and DC.

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39. Given : q tan A = p, find the value of :

$$\frac{p\sin A - q\cos A}{p\sin A + q\cos A}$$

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40. If sin A = cos A, find the value of $2\tan^2 A - 2\sec^2 A + 5$.

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41. In rectangle ABCD, diagonal BD = 26 cm and cotangent of angle ABD = 1.5. Find the area and the perimeter of the rectangle ABCD.

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42. If 2 sin $x = \sqrt{3}$, evaluate .

$4\sin^3 x - 3\sin x.$

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43. If 2 sin $x = \sqrt{3}$, evaluate .

$3\cos x - 4\cos^3 x.$

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44. If $\sin A = \frac{\sqrt{3}}{2}$ and $\cos B = \frac{\sqrt{3}}{2}$, find the value of : $\frac{\tan A - \tan B}{1 + \tan A \tan B}$

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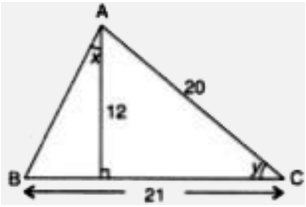
45. Use the informations given in the following figure to evaluate : $\frac{10}{\sin x} + \frac{6}{\sin y} - 6 \cot y.$



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46. If $\sec A = \sqrt{2}$, find : $\frac{3 \cot^2 A + 2 \sin^2 A}{\tan^2 A - \cos^2 A}$

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47. If $5\cos\theta = 3$, evaluate : $\dfrac{\text{cosec}\theta - \cot\theta}{\text{cosec}\theta + \cot\theta}$

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48. If cosec A + sin A = $5\dfrac{1}{5}$, find the value of $\text{cosec}^2 A + \sin^2 A$.

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49. If $5\cos\theta = 6$, $\sin\theta$, evalutate :

$\tan\theta$

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50. If $5\cos\theta = 6$, $\sin\theta$, evalutate :

$\dfrac{12\sin\theta - 3\cos\theta}{12\sin\theta + 3\cos\theta}$

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