



## MATHS

### BOOKS - DEEPTI MATHS (TELUGU ENGLISH)

#### HYPERBOLIC FUNCTIONS

#### Solved Examples

1. If  $\cosh x = 5/4$  then  $\sinh 2x =$

- A.  $5/8$
- B.  $15/8$
- C.  $7/8$
- D.  $17/8$

**Answer: B**



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2. If  $\sinh x = 3/4$  then  $\sinh 3x =$

A.  $61/16$

B.  $63/16$

C.  $65/16$

D.  $67/16$

**Answer: B**



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3. If  $\cosh 2x = 99$ , then  $\tanh x =$

A.  $5/7\sqrt{2}$

B.  $7/5\sqrt{2}$

C.  $5\sqrt{7}/2$

D.  $7\sqrt{5}/2$

**Answer: B**



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4.  $\operatorname{Cosech}^{-1}(3) =$

A.  $\log(1 + \sqrt{10})$

B.  $\log\left(\frac{1 + \sqrt{10}}{3}\right)$

C.  $\log(1 + \sqrt{5})$

D.  $\log\left(\frac{1 + \sqrt{5}}{3}\right)$

**Answer: B**



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5.  $\operatorname{Sech}^{-1}(1/5) =$

A.  $\log(5 + \sqrt{21})$

B.  $\log(5 + \sqrt{24})$

C.  $\log(21 + \sqrt{5})$

D.  $\log(24 + \sqrt{5})$

**Answer: B**

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6. If  $\sinh^{-1}\sqrt{3} = \log(\operatorname{sech}\theta + \tanh\theta)$ , then  $\theta =$

A.  $\pi/6$

B.  $\pi/4$

C.  $\pi/3$

D.  $2\pi/3$

**Answer: C**

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7.  $\log [\cot(\theta/2)] =$

A.  $\text{Sinh}^{-1}(\cos \theta)$

B.  $2 \text{Tanh}^{-1}(\cos \theta)$

C.  $\text{Tanh}^{-1}(\cos \theta)$

D.  $\text{Coth}^{-1}(\cos \theta)$

**Answer: C**



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## Exercise 1

1.  $\cosh 2 + \sinh 2 =$

A.  $1/e$

B.  $e$

C.  $1/e^2$

D.  $e^2$

**Answer: D**



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2.  $2 \cosh 3 \cosh 5 =$

A.  $\cosh 2$

B.  $\cosh 8 - \cosh 2$

C.  $\cosh 15$

D.  $\cosh 8 + \cosh 2$

**Answer: D**



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3.  $\sinh 2x = 70\sqrt{2}$  if

A.  $\sinh x = 5$

B.  $\sinh x = 7$

C.  $\cosh x = 5$

D.  $\cosh x = 7$

**Answer: B**



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4. If  $\sinh 9 - k \sinh k = (k + 1) \sinh^3 k$ , then  $k =$

A. 3

B. 4

C. 9

D. none of these

**Answer: A**



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5.  $\cosh 3\theta = 99$  if  $\cosh \theta =$

A. 3

B. 9

C. 11

D. 27

**Answer: A**



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6.  $(\cosh x + \sinh x)^n =$

A.  $\cosh nx + \sinh nx$



B.  $\tanh nx + \coth nx$

C.  $\coth nx + \operatorname{sech} nx$

D.  $\sinh nx + \operatorname{cosech} nx$

**Answer: A**



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7.  $\frac{1 + \tanh x}{1 - \tanh x} =$

A.  $\sinh 2x + \tanh 2x$

B.  $\tanh 2x + \coth 2x$

C.  $\sinh 2x + \cosh 2x$

D.

**Answer: C**



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8.  $\frac{1 + \tanh(x/2)}{1 - \tanh(x/2)} =$

A.  $e^{-x}$

B.  $e^x$

C.  $2e^{x/2}$

D.  $2e^{-x/2}$

**Answer: B**



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9. The value of  $\frac{\cosh(2\theta) - 1}{\sinh(2\theta)} =$

A.  $\coth \theta$

B.  $\tanh \theta$

C.  $\operatorname{cosech} \theta$

D.  $\operatorname{sech} \theta$

**Answer: B**



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10.  $\frac{\cosh x - 1}{\sinh x} =$

A.  $\sinh \frac{x}{2}$

B.  $\cosh \frac{x}{2}$

C.  $\tanh \frac{x}{2}$

D.  $\coth \frac{x}{2}$

**Answer: C**



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11.  $\frac{\cosh x + 1}{\cosh x - 1} = \coth^2 \frac{x}{k}$ , then  $k =$

A. 1

B. - 1

C. 2

D. 3

**Answer: C**



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12. If  $\frac{3 \sinh 2\theta}{5 + 4 \cosh 2\theta} = 1$ , then  $\tanh^2\theta + 6 \tanh \theta$  is equal to

A. 3

B. 4

C. 5

D. 9

**Answer: D**



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13.  $\frac{\tanh x}{\operatorname{sech} x - 1} + \frac{\tanh x}{\operatorname{sech} x + 1} =$

A.  $-2 \operatorname{cosech} x$

B.  $\sinh x + \cosh x$

C.  $\operatorname{sech} x$

D.  $\tanh x$

**Answer: A**



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14.  $\frac{\cosh x}{1 - \tanh x} + \frac{\sinh x}{1 - \coth x} =$

A.  $2 \operatorname{cosech} x$

B.  $\sinh x + \cosh x$

C.  $\operatorname{sech} x$

D.  $\tanh x$

**Answer: B**



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15. If  $\tan A = \tan \alpha \tanh \beta$ ,  $\tan B = \cot \alpha \tanh \beta$ , then  $\tan (A + B) =$

A.  $\sinh 2\beta \cos 2\alpha$

B.  $\sinh 2\beta \operatorname{cosec} 2\alpha$

C.  $\cosh 2\beta \sec 2\alpha$

D.  $\cosh 2\beta \tan 2\alpha$

**Answer: B**



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16. If  $\frac{\tan x}{2} \coth \frac{x}{2} = 1$ , then  $\cos x \cosh x =$

A. 1

B.  $-1$

C.  $\cos^2 x$

D.  $\sinh^2 x$

**Answer: A**



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17. If  $\cosh x = 3/4$ , then  $\cosh 2x =$

A.  $15/8$

B.  $1/8$

C.  $8/15$

D.  $17/8$

**Answer: B**



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18. If  $\cosh x = 5/2$ , then find the value of (i)  $\cosh(2x)$  and (ii)  $\sinh(2x)$

A.  $\frac{21}{2}$

B.  $\frac{23}{2}$

C.  $\frac{5\sqrt{21}}{2}$

D.  $\frac{5\sqrt{23}}{2}$

**Answer: C**



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19. If  $\cosh \theta = 3$ , then the value of  $\cosh 3\theta =$

A. 99

B. 89

C. 89

D. none



**Answer: A**



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20. If  $\tanh \alpha = 2/3$ ,  $\tanh \beta = 3/5$  then  $\cosh (\alpha - \beta) =$

A.  $9/20$

B.  $9\sqrt{5}/20$

C.  $1/9$

D.  $20/9$

**Answer: B**



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21. If  $\cosh x = \cos \theta$ , then  $\frac{\tanh^2 x}{2} =$

A.  $\frac{\sin^2 \theta}{2}$

B.  $\frac{\cos^2 \theta}{2}$

C.  $-\frac{\tan^2 \theta}{2}$

D.  $\frac{\cot^2 \theta}{2}$

**Answer: C**



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22. If  $\tanh^2 x = \sin^2 \theta$ , then  $\operatorname{sech} x =$

A.  $\sin \theta$

B.  $\cos \theta$

C.  $\tan \theta$

D.  $\sec \theta$

**Answer: B**



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23. If  $\coth x = \sec \theta$ , then  $\operatorname{cosech} x =$

A.  $\operatorname{cosec} \theta$

B.  $\sec \theta$

C.  $\tan \theta$

D.  $\cot \theta$

**Answer: C**



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24. If  $\tanh^2 x = \sec \theta$ , then  $\cosh 2x =$

A.  $\tan^2(\theta/2)$

B.  $\cot^2(\theta/2)$

C.  $\sec^2(\theta/2)$

D. none

**Answer: B**



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**25.** If  $\operatorname{cosec} x = \operatorname{coth} y$ , then  $\tan x =$

- A.  $\cosh y$
- B.  $\sinh y$
- C.  $\tanh y$
- D.  $\operatorname{cosech} y$

**Answer: B**



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**26.** If  $\sinh x = \cos \theta$  and  $\sin \theta = 2/3$  then  $\cosh x =$

- A.  $\sqrt{5}/3$

B.  $\sqrt{13}/3$

C.  $\sqrt{14}/3$

D. none

**Answer: C**



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27. If  $\sin x \cosh y = \cos \theta$ ,  $\cos x \sinh y = \sin \theta$  then  $\sinh^2 y =$

A.  $\cosh^2 y$

B.  $\cos^2 x$

C.  $\cosh^3 x$

D. none

**Answer: B**



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28. If  $\sin x \sinh y = \cos \theta$ ,  $\cos x \cosh y = \sin \theta$  then  $\cosh^2 y + \cos^2 x =$

A.  $-1$

B.  $0$

C.  $1$

D.  $2$

**Answer: D**



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29. If  $x = \log\left(y + \sqrt{y^2 - 1}\right)$  then  $y =$

A.  $\tanh x$

B.  $\coth x$

C.  $\sinh x$

D.  $\cosh x$

**Answer: D**



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**30.**  $\sinh^{-1}x$  is

- A. an odd function
- B. an even function
- C. an even and odd function
- D. none

**Answer: A**



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**31.**  $\sinh^{-1}\left(2^{3/2}\right) =$

- A.  $\log(2 + \sqrt{18})$

B.  $\log(3 + \sqrt{8})$

C.  $\log(2 - \sqrt{8})$

D.  $\log(\sqrt{8} + \sqrt{27})$

**Answer: B**



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32.  $\cosh^{-1}(1) =$

A.  $\log(\sqrt{2} + 1)$

B.  $\log(\sqrt{2} - 1)$

C. 0

D. 1

**Answer: C**



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33.  $2 \tanh^{-1} \frac{1}{2} =$

A. 0

B.  $\log 2$

C.  $\log 3$

D.  $\log 4$

**Answer: C**



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34.  $\tanh^{-1}(1/2) + \coth^{-1}(2) =$

A.  $\log 2$

B.  $\log 3$

C.  $\log 4$

D. 0

**Answer: B**

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35.  $\operatorname{sech}^{-1}\left(\frac{1}{2}\right) - \operatorname{cosech}^{-1}\left(\frac{3}{4}\right) =$

A.  $\log_e\left(\frac{1 + \sqrt{3}}{3}\right)$

B.  $\log_e\left(\frac{2 + \sqrt{3}}{3}\right)$

C.  $\log_e\left(\frac{2 - \sqrt{3}}{3}\right)$

D.  $\log_3[3(2 + \sqrt{3})]$

**Answer: B**

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36.  $\tanh^{-1}x = a \log\left(\frac{1+x}{1-x}\right), |x| < 1 \Rightarrow a =$

A. 1

B. 2

C.  $\frac{1}{2}$

D.  $\frac{1}{4}$

**Answer: C**



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37. If  $\tanh^{-1} \frac{1 - \sqrt{1 - x^2}}{x} = 4$  then  $x =$

A.  $\tanh(1/4)$

B.  $\tanh 2$

C.  $\tanh 4$

D.  $\tanh 8$

**Answer: D**



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38. The value of the expression  $\operatorname{sech}^2\left(\tanh^{-1}(1/2)\right) + \operatorname{cosech}^2\left(\coth^{-1}3\right)$  is

A.  $35/9$

B.  $43/4$

C.  $35/4$

D.  $43/9$

**Answer: C**



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39.  $\sinh^{-1}\left[-\frac{x}{\sqrt{1-x^2}}\right] =$

A.  $\coth^{-1}x$

B.  $-\coth^{-1}x$

C.  $-\tanh^{-1}x$

D.  $\tanh^{-1}x$

**Answer: D**



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**40.** The value of  $\sinh \left( \cosh^{-1}x \right)$  is

A.  $\sqrt{x^2 + 1}$

B.  $1 / \sqrt{x^2 - 1}$

C.  $\sqrt{x^2 - 1}$

D. none

**Answer: C**



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**41.** If  $\sinh [ 2 \operatorname{Coth}^{-1}x ] = 11/60$  then  $x$  is equal to

A.  $-1/11$

B.  $-11$

C.  $11$

D.  $1/11$

**Answer: C**

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42. If  $y = \frac{1}{2} \operatorname{cosech}^{-1} \left( \frac{1}{2x\sqrt{1+x}} \right)$ , then  $x =$

A.  $\cosh y$

B.  $\sinh y$

C.  $\tanh y$

D.  $\coth y$

**Answer: B**

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$$43. x = \log\left(\frac{1}{y} + \sqrt{1 + \frac{1}{y^2}}\right) \Rightarrow y =$$

- A.  $\tanh x$
- B.  $\coth x$
- C.  $\operatorname{sech} x$
- D.  $\operatorname{cosech} x$

**Answer: D**



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$$44. \text{For } 0 < x \leq \pi, \operatorname{Sinh}^{-1}(\cot x) =$$

- A.  $\log\left(\frac{\cot x}{2}\right)$
- B.  $\log\left(\frac{\tan x}{2}\right)$
- C.  $\log(1 + \cot x)$

$$D. \log(1 + \tan x)$$

**Answer: A**



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$$45. \operatorname{Sech}^{-1}(\sin \theta) =$$

A.  $\log \tan \theta$

B.  $\frac{\log \sin \theta}{2}$

C.  $\frac{\log \cos \theta}{2}$

D.  $\frac{\log \cot \theta}{2}$

**Answer: D**



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$$46. e^{\sinh^{-1}(\tan \theta)} =$$



A.  $\sec \theta$

B.  $\tan \theta$

C.  $\sec \theta + \tan \theta$

D. none

**Answer: C**



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47. If  $\log(5 + \sqrt{26}) = \sinh^{-1} k$  then  $x =$

A. 2

B. 3

C. 6

D. 5

**Answer: D**



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48. If  $\cosh^{-1}k = \log(2 + \sqrt{3})$  then  $k =$

A. 2

B. 1

C. 6

D. 5

**Answer: A**



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49.  $\log(7 + 5\sqrt{2}) =$

A.  $\sinh^{-1}5$

B.  $\sinh^{-1}7$

C.  $\cosh^{-1}5$

D.  $\cosh^{-1}7$

**Answer: B**



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50. If  $\sinh^{-1}2 + \sinh^{-1}3 = \alpha$ , then  $\sinh \alpha$  is equal to

A.  $3\sqrt{10} + 2\sqrt{5}$

B.  $2\sqrt{10} + 3\sqrt{5}$

C.  $2\sqrt{10} + 3\sqrt{2}$

D. none

**Answer: B**



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51. If  $f(x) = \cosh x + \sinh x$  then  $f(x_1 + x_2 + \dots + x_e) =$

A. 0

B.  $f(x_1) + f(x_2) + \dots + f(x_e)$

C. 1

D.  $f(x_1)f(x_2)\dots F(x_a)$

**Answer: D**



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52. If  $\cosh x = \sec \theta$ , then  $x =$

A.  $\tan(\pi/4 + \theta/2)$

B.  $\log \tan(\pi/4 + \theta/2)$

C.  $\tan(\pi/4 - \theta/2)$

D.  $\log \tan(\pi/4 - \theta/2)$

**Answer: B**



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53.  $\log \left( x - 1 + \sqrt{x^2 - 2x} \right) (x \geq 2)$  is equal to

A.  $\sinh^{-1}(x - 1)$

B.  $\sinh^{-1}(x + 1)$

C.  $\cosh^{-1}(x - 1)$

D.  $\cosh^{-1}(x + 1)$

**Answer: C**



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54. If  $x = \tanh^{-1}y$ , then  $\log_e \left( \frac{1 + y}{1 - y} \right) =$

A.  $x$

B.  $4x$

C.  $2x$

D.  $3x$

**Answer: C**



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55. If  $|x| < 1$ , then  $\frac{1}{2} \log \left( \frac{1+x}{1-x} \right) =$

A.  $\tanh x$

B.  $\sinh^{-1} x$

C.  $\cosh^{-1} x$

D.  $\tanh^{-1} x$

**Answer: D**



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56. If  $2\sinh^{-1} \left( \frac{a}{\sqrt{1-a^2}} \right) = \log \left( \frac{1+x}{1-x} \right)$ , then  $x =$

A.  $2a$

B.  $3a$

C.  $4a$

D.  $a$

**Answer: D**



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57. If  $\cos \alpha \cosh \beta = 1$ , then  $\beta =$

A.  $\log \sec \frac{\alpha}{2}$

B.  $\log \tan \alpha$

C.  $\log (\sec \alpha + \tan \alpha)$

D.  $\log \sin \frac{\alpha}{2}$

**Answer: C**



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58. If  $x = \log \left( y + \sqrt{y^2 - 1} \right)$  and  $\sinh x = 9$  then  $y^2 =$

A. 80

B. 81

C. 82

D. none

**Answer: C**



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59. If  $x = \log \left[ \tan \left( \frac{\pi}{4} + \frac{\theta}{2} \right) \right]$  then  $\cosh x =$

A.  $\sec \theta$

B.  $\operatorname{cosec} \theta$

C.  $\sin \theta$



D.  $\cos \theta$

**Answer: A**



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60. If  $x = \log \left[ \cot \left( \frac{\pi}{4} + \theta \right) \right]$  then  $\sinh x =$

A.  $\tan 2\theta$

B.  $\cot 2\theta$

C.  $-\tan 2\theta$

D.  $-\cot 2\theta$

**Answer: C**



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61. If  $\sinh^{-1} 2x = 2 \cosh^{-1} y$ , then

A.  $x^2 = y^2 = x^4$

B.  $x^2 + y^2 = 4$

C.  $x^2 + y^2 = y^4$

D.  $x^2 = y^2$

**Answer: C**



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**62.** The domain and range of  $f(x) = \coth(x)$  are respectively

A.  $R - \{0\}, R - [-1, 1]$

B.  $R - [-1, 1], R - \{0\}$

C.  $R, R - \{0\}$

D.  $R - \{0\}, R$

**Answer: A**



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63. The range of  $\cosh(x)$  is

- A.  $R$
- B.  $(0, 1)$
- C.  $(1, \infty)$
- D.  $(1, \infty)$

Answer: C



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64.  $\cosh(2i\theta) =$

- A.  $I \sin 2\theta$
- B.  $(0, 1)$
- C.  $[1, \infty)$

D.  $(1, \infty)$

**Answer: B**



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65.  $\sinh ix =$

A.  $I \sin x$

B.  $\sin(ix)$

C.  $-I \sin x$

D.  $I \sin(ix)$

**Answer: A**



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66. If  $\cos(x + iy) = A + iB$ , then  $A =$

A.  $\cos x \cosh y$

B.  $\sin x \sinh y$

C.  $-\sin x \sinh y$

D.  $\cos x \sinh y$

**Answer: A**



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67. If  $\sin(x + iy) = A + iB$ , then  $A =$

A.  $\sinh x \cos y$

B.  $\sin x \cosh y$

C.  $\cos x \sinh y$

D.  $\cosh x \sin y$

**Answer: B**



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68. The real part of  $\sinh(\alpha + I\beta)$  is

A.  $\sinh \alpha \cos \beta$

B.  $\sin \alpha \cosh \beta$

C.  $\sinh \alpha \cosh \beta$

D.  $\cosh \alpha \in \beta$

**Answer: A**



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69. If  $z = x + iy$  such that  $\cos z = 2$ , then  $z =$

A.  $\log(2 + \sqrt{3})$

B.  $I \log(2 + \sqrt{3})$

C.  $\log(2 + \sqrt{5})$

D.  $I \log(2 - \sqrt{3})$

**Answer: D**



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## Exercise 2 Special Type Questions Set 1

1. I:  $\frac{\tanh x}{\operatorname{sech} x - 1} + \frac{\tanh x}{\operatorname{sech} x + 1} + 2 \operatorname{cosech} x = 0$

II:  $\frac{\cosh x}{1 - \tanh x} + \frac{\sinh x}{1 - \coth x} = \sinh x + \cosh x$

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

**Answer: C**



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2. I : If  $\tanh^2 x = \sin^2 \theta$  then  $\operatorname{sech} x = \cos \theta$

II :  $\operatorname{coth} x = \sec \theta$   $\operatorname{cosech} x = \sin \theta$

- A. only I is true
- B. only II is true
- C. both I and II are true
- D. neither I nor II true

**Answer: A**



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3.

I : If  $f(x) = \cosh x + \sinh x$  then  $f(x_1 + x_2 + \dots + x_n) = f(x_1) \cdot f(x_2) \cdot \dots \cdot f(x_n)$

II : If  $f(x) = \cosh x + \sinh x$  then  $f(x_1) + f(x_2) + \dots + f(x_n) = f(x_1) \cdot f(x_2) \cdot \dots \cdot f(x_n)$

- A. only I is true
- B. only II is true



C. both I and II are true

D. neither I nor II true

**Answer: A**



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## Exercise 2 Special Type Questions Set 2

1. Ascending order of  $A = \sinh 0$ ,  $B = \cosh 0$ ,  $C = \operatorname{sech} 1$ ,  $D = \operatorname{cosech} 1$  is

A. A, B, C, D

B. A, C, D, B

C. B, ,D, C, A

D. D, B, A, C

**Answer: B**



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2. Ascending order of the following

A)  $\cosh 2 + \sinh 2$

B)  $\cosh 2 - \sinh 2$

(C)  $\cosh 0 + \sinh 0$

(D)  $(\cosh 2 - \sinh 2)^2$

A. A, B, C, D

B. B, C, D, A

C. D, B, C, A

D. A, B, C, D

**Answer: C**



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3. Ascending order of

(A)  $\sinh^{-1}$

(B)  $\cosh^{-1}(1)$

(C)  $\tanh^{-1}\frac{1}{2}$

(D)  $\operatorname{sech}^{-1}\frac{1}{2}$

A. A, B, C, D

B. B, C, A, D

C. B, D, C, A

D. D, B, A, C

**Answer: B**



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4. If  $A = \tanh^{-1}(1/2) + \coth^{-1}(2)$ ,  $B = \sinh^{-1}(\cosh^{-1}9)$ .

$C = \operatorname{sech}^2\left(\tanh^{-1}1/2\right) + \operatorname{cosech}^2\left(\coth^{-1}3\right)$  then

A.  $A < B < C$

B.  $A < C < B$

C.  $B < A < C$

$$D. B < C < A$$

Answer: A



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### Exercise 2 Special Type Questions Set 3

Match the following

I.  $\log_e (3 + \sqrt{10})$

II.  $\log_3 (7 + 4\sqrt{3})$

III.  $\sin(ix)$

IV.  $\frac{1}{2} \log_e \left(\frac{1}{x}\right)$

a)  $2 \operatorname{Sinh}^{-1}(\sqrt{3})$

b)  $\tanh^{-1} \left(\frac{1-x}{1+x}\right)$

c) 2

d)  $\operatorname{Sinh}^{-1} 3$

e)  $i \sinh x$

1.

A. a, c, d, e

B. a, d, b, e

C. d, a, e, b

D. d, a, b, c

Answer: C



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Match the following

I.  $\cosh(\alpha + \beta) \cosh(\alpha - \beta) - 1$

a)  $\frac{\sinh(\alpha - \beta)}{\cosh(\alpha + \beta)}$

II.  $\frac{\tanh \alpha - \tanh \beta}{1 + \tanh \alpha \tanh \beta}$

b)  $\sinh^2 \alpha + \sinh^2 \beta$

III.  $\frac{1}{2} \log_e (\sec 2\theta + \tan 2\theta)$

c)  $\text{Cosh}^{-1}(x + 3)$

IV.  $\log_e (x + 3 + \sqrt{x^2 + 6x + 8})$

d)  $\text{Cosh}^{-1} x$

2.

e)  $\text{Tanh}^{-1}(\tan \theta)$

A. b, a, e, c

B. b, a, c, e

C. b, c, a, e

D. a, b, d, e

Answer: A



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Match the following

Function

I.  $\operatorname{sech} x$

II.  $\operatorname{Coth}^{-1} x$

~~III.  $\operatorname{Cosech}^{-1} x$~~

3. IV.  $\operatorname{coth} x$

Domain

a)  $R - [-1, 1]$

b)  $R - \{0\}$

~~c)  $R$~~

d)  $[1, \infty)$

A. c, a, b, d

B. a, c, b, d

C. a, c, d, b

D. c, a, d, b

**Answer: D**



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## Exercise 2 Special Type Questions Set 4

1. A :  $\operatorname{cosech}^{-1} 2 = \log_e \left( \frac{1 + \sqrt{5}}{2} \right)$

R :  $\operatorname{cosech}^{-1} x = \log_e \left[ \frac{1 + \sqrt{1 + x^2}}{2} \right]$

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: A**



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2. A : If  $\tanh 5 \sinh \theta = \cosh 10$  - then  $\theta = 10$

R :  $\cosh 2\theta - 1 = 2 \cosh^2 \theta$

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**

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3. A : If  $\sinh^{-1} \sqrt{3} = \log_e (\sec \theta + \tan \theta)$ , then  $\theta = \pi/3$

R : If  $\tan \theta = \sqrt{3}$ ,  $\sec \theta = 2 \Rightarrow \theta = \pi/3$

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true but R is not correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

**Answer: A**

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