



MATHS

BOOKS - UNITED BOOK HOUSE

MODEL QUESTION PAPERS-SET 14

Exercise

1. If A = {2, 3, 9} and B = {2, 3, 4, 5, 6} then $A \cap B$ is

A. a){2,3,4,5,6,9}

B.b){2,3}

C. c){4,5,6,9}

D. d){2,3,4,5,6}

Answer:

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2. If
$$(i)^{-n} = 1 (n \in N)$$
,then least value of n will be

A. a)0

B. b)2

C. c)3

D. d)4

Answer:



3. If n is natural number & $n \ge 1, then(3^{2n} - 1)$ is always divisible by

A. a) $3^n - 1$ B. b) $2^n + 2$ C. c) $2^{2n} + 1$

 $\mathsf{D}.\,\mathsf{d})2^n-2$

Answer:



4. In a $G.~P.~T_{10}=9$ and $T_4.~=4$, T_7 will be

A. a)13

B. b)5

C. c)6

D. d)9/4

Answer:



5. The normal to-be circle $x^2 + y^2 - 4x + 6y - 12 = 0$

passes through the point

A. a)(-2,-3)

B. b)(2,-3)

C. c)(-2,3)

D. d)(2,3).

Answer:

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6. The angle between the two straight line of a pair of straight line $x^2 - y^2 - 2y - 1 = 0$ is

A. a) 30°

B. b) 60°

C. c) $75^{\,\circ}$

D. d)90 $^{\circ}$

Answer:



7. Value of
$$\lim_{x o 2} \ [x]$$
 is

A. a)-2

B. b)1

C. c)2

D. d)no existence.

Answer:



8. If x^{1008} . $Y^{1006} = \left(x+y
ight)^{2014}$, then dy/dx=

A. a)y/x

B.b)x/y

C. c)
$$rac{x}{x+y}$$

D. d) $rac{y}{x+y}$

Answer:



9. Three dice are thrown at a time. The probability of the

same number in every dice is

B. b)1/3

C. c)1/36

D. d)1/9

Answer:



10. Median of 1st n natural numbers is

A. a)(n+1)/(n-1)

B. b)(n+1)/n

C. c)(n-1)/(n+1)

D. d)(n+1)/2

Answer:



11. Let R be the relation defined on the set N of natural numbers as R = $\{(x, y) \mid 4x + 5y = 50, x, y \in N\}$.Express R and R^{-1} as set of ordered pairs

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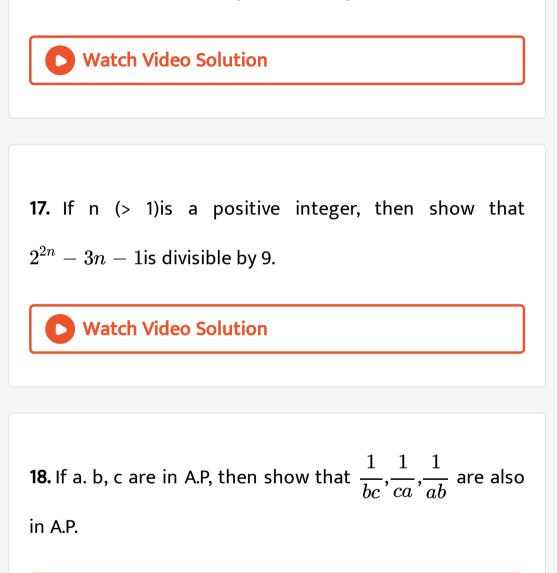
12. If set A and set B are the sub-set of X. show that $X - (A \cap B) = (X - A) \cup (X - B).$

13. Show that
$$\sin\left(\frac{7\pi}{12}\right) = \frac{1}{4}(\sqrt{6} + \sqrt{2})$$

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14. In $\triangle ABC$. if b cos A -a cos B = 0, show that the triangle isosceles.
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15. If $Z_1 = -3 + 4i$, $Z_2 = 12 - 5i$, prove that $|z_1 + z_2| < |z_1 - z_2|$
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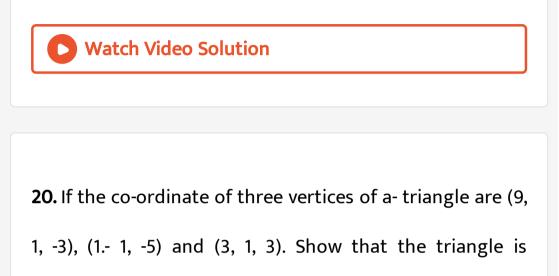
16. How many solutions are there in the equation xyz = 2y

where the solutions are positive integers.

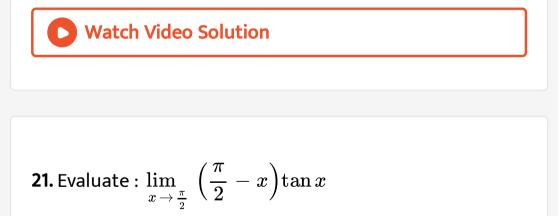


19. Find the perpendicular bisector of AB, where the co-

ordinates of A and B are (0, -5) and (2,-3) respectively.



equilateral



22. If $f(x + 2) = 2x^2 - 3x - 1$, find the value of f(x + 1)



23. Three dice are thrown simultaneously. Find the probability that the sum of the numbers obtained will be 15.

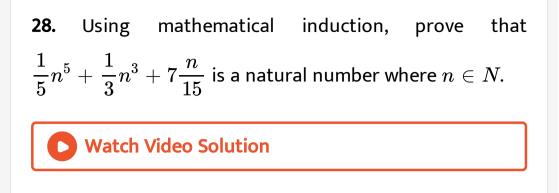
24. Two variables x and y are related by $y=8+2x, ext{ if the }$

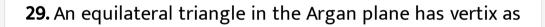
S.D. of x is 3, then the S.D. of y will be-

25. In three sets P,Q,R if $P \cup R = P \cup Q$ and $P \cap Q = P \cap R$,then show that Q=R.

26.
$$\sin \theta = k \sin(\theta + \phi)$$
.show that
 $\tan(\theta + \phi) = \frac{\sin \phi}{\cos \phi - K}$
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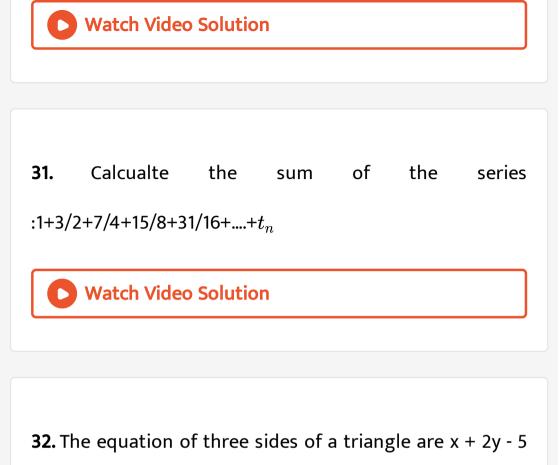
27. In
$$riangle ABC$$
 if $rac{1}{a+c}+rac{1}{b+c}=rac{3}{a+b+c}$, show that $\angle C=rac{\pi}{3}$





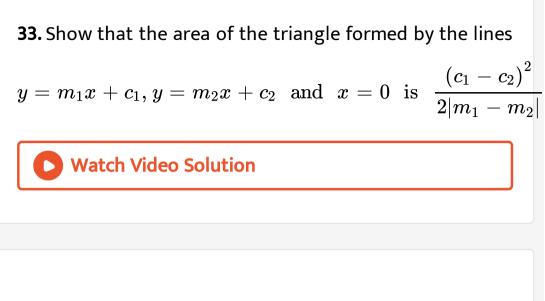
 z_1, z_2 and z_3 which are there complex no show that $\frac{1}{z_1 - z_2} + \frac{1}{z_3 - z_1} + \frac{1}{z_2 - z_3} = 0$ Watch Video Solution

30. How many arragements can be made out of the letters of the word FAILURE at a time, such that the two vowels do not come together?



= 0, x + y = 6 and y + 2x-4 = 0. Find the co-ordinate of its

ortho centre



34. Find the equation, centre, and radius of a circle which

is passes through the points (3, 4), (3, -6) and (-1, 2).



35. By using section formula, show that the points .(1, 2,

3), (-2, 4, 2) and (7, -2, 5) are colinear



36. Evaluate
$$\lim_{x o \pi/4} rac{4\sqrt{2} - \left(\cos x + \sin x
ight)^5}{1 - \sin 2x}$$

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37. If
$$f(x)=\sqrt{2}x-\sqrt{rac{2}{x}}+rac{4-x}{4-x}$$
, find the value of f(2)

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38. If $2x^3 + 5x = 0$, where x is a real number, then x = 0'

examine the statement by contrapositive method.

39. 'If for any real no x, $x^3 + x = 0$, then x =0' prove this

by the method of contradiction

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40. A,B,C and D are four mutually exclusive and exhuastive

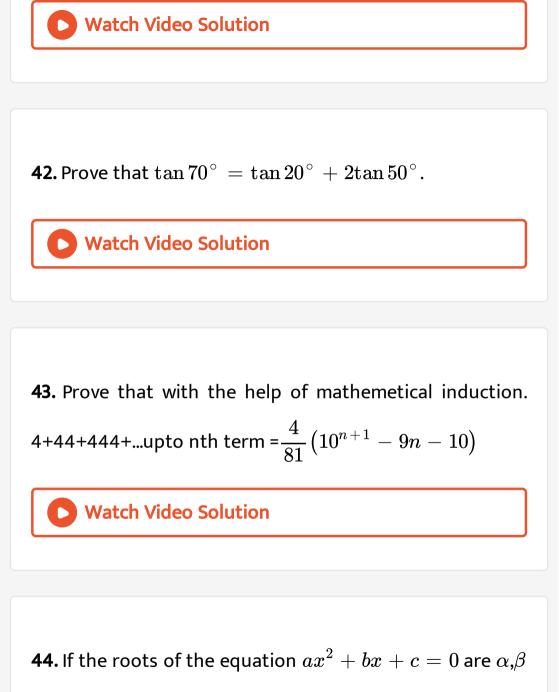
events. If the odds against the events B,C and D are 7:2,

7:5, and 13:5 respectively, find the odds in favour of the

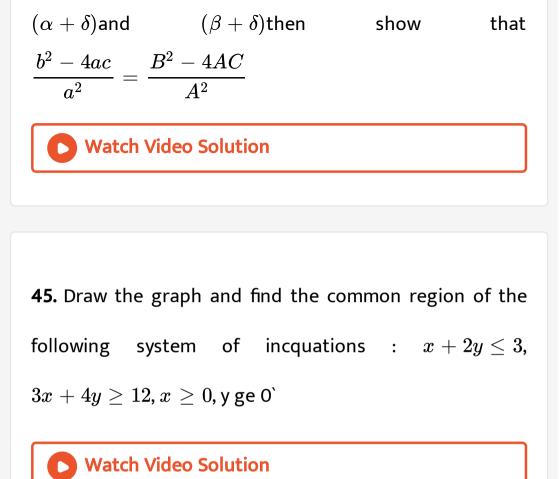
event A.



41. Prove that
$$\cos^2lpha+\cos^2(120^\circ-lpha)+\cos^2(120^\circ+lpha)=rac{3}{2}$$



and the roots of the equation $Ax^2 + Bx + C = 0$ are



46. Show that there are 136 ways of selecting 4 letters

from the word EXAMINATION.



47. Prove that the least focal chord of a parabolaa is it

rectum.

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48. Find the eccentricity and the equation of directix of the ellipse $\frac{x^2}{100} + \frac{y^2}{36} = 1$ Show that the sum of the focal distances at any point on the ellipse $\frac{x^2}{100} + \frac{y^2}{36} = 1$ is constant.

49. Show that the difference of the focal distances of any point on the hyperbola $9x^2 - 4y^2 = 36$ is equal to its transverse axis.