





MATHS

BOOKS - UNITED BOOK HOUSE

ANNUAL EXAMINATION QUESTION PAPERS 2018



1. Write down all the subsets of the following sets

 ϕ

A. a)0

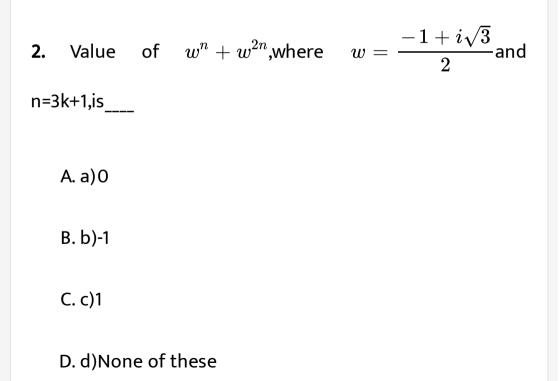
B. b)1

C. c)2

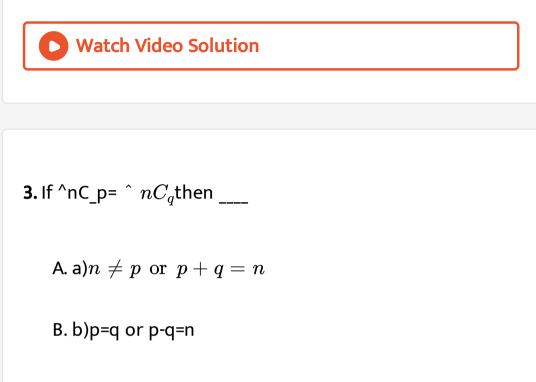
D. d)None of these

Answer:





Answer:



C. c)
$$n=p=q
eq n$$

D. d)p=qor p+q=n.

Answer:



4. Value of sin 36° is _____

A. a)
$$\frac{1}{4}\sqrt{10-2\sqrt{5}}$$

B. b) $\frac{1}{4}\sqrt{10+2\sqrt{5}}$
C. c) $\frac{1}{4}\sqrt{10+\sqrt{5}}$
D. d) $\frac{1}{4}\sqrt{10-\sqrt{5}}$

Answer:



5. The value of
$$\lim_{x o 4} \left(rac{e^x - e^4}{x - 4}
ight)$$
 is _____

A. a)
$$e^{-4}$$

 $\mathsf{B}.\,\mathsf{b})e^4$

C. c)1

D. d)None of these

Answer:

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6. Find the point of z-axis which equidistant from the points (1,5,7) and (5,1,-4)____

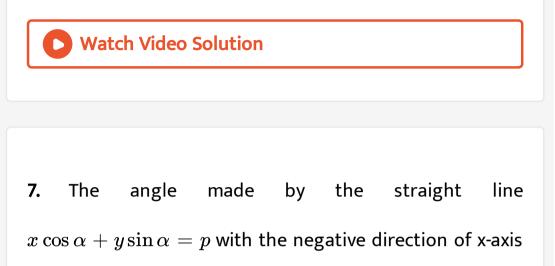
A. a)(0,0,3/2)

B.b)(0,0,5)

C. c)(0,5,0)

D. d)(4,2,3)

Answer:



A. a)
$$rac{\pi}{2}+lpha$$

B.b) α

is ____

C. c)
$$-\alpha$$

D. d)
$$rac{\pi}{2}-lpha$$

Answer:



8. If f(x)=|x|,then f(0) Is ___

A. a)0

B. b)1

C. c)-1

D. d)None of these

Answer:



9. In single throw of two dice, the probality of obtaning 'a

total of 8' is___

A. a)8/36

B. b)3/36

C. c)9/36

D. d)5/36

Answer:

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10. If y=2x+3,and variance of y is 4,then the standard deviation of x is ____

A. a)-1

B.b)4

C. c)1

D. d)2

Answer:

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11. If $A \cap B^1 = \phi$, then show that $A = A \cap B$ and hence show that $A \subset B$.

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12. Find the domain and range of the real function $f(x) = rac{1}{(1-x^2)}$





13. Prove that
$$\cos^2 48^\circ - \sin^2 12^\circ = rac{\left(\sqrt{5}+1
ight)}{8}$$

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14. Show that cot 2x.cotx-cot3x.cot2x-cot3x.cotx=1

15. Find the value of n so that $rac{a^{n+1}+b^{n+1}}{a^n+b^n}$ may be the

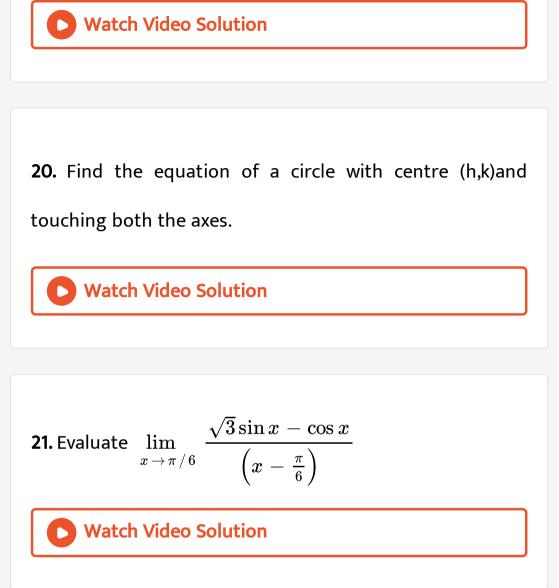
geometric mean between a and b.

16. Find the value of r, if the coefficients of (2r+4)th and (r-

2) -th terms in the expansion of $\left(1+x
ight)^{18}$ are equal

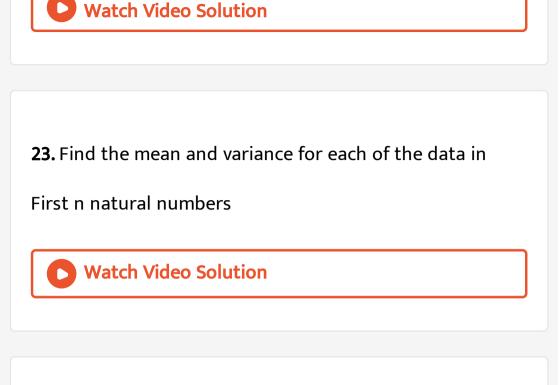
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17. Find the principal amplitude of (-1-i). Watch Video Solution
18. Find the number of squares in chess board.
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19. Find the focus of the parabola $y = x^2 + x + 1$.



22. Prove that the derivative of an odd function an ever function .





24. If P(A)=2/3,P(B)=1/2, $P(A\cap B)=rac{1}{6},$ then find the value of $P(A\cap B')$ and $P(A\cup B)$

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25. Let $A = ig\{ x \in N \colon x^2 - 5x + 6 = 0 ig\}.$ $B = \{ x \in W \colon 0 \le x < 2 \}$ and $C = \{ x \in N \colon x < 3 \}$,then verify that $A imes (B \cup C) = (A imes B) \cup (A imes C)$



26. Prove that in any
$$\triangle ABC$$
.
 $(b-c)\cot\left(\frac{A}{2}\right) + (c-a)\cot\left(\frac{B}{2}\right) + (a-b)\cot\left(\frac{C}{2}\right) = 0$

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27. Solve $\sec x - \tan x = \sqrt{3}$

28. If P-th ,q-th and r-th terms of an AP as well those of a

GP are a,b,c respectively,then prove that a^{b-c} : b^{c-a} : $c^{a-b} = 1$

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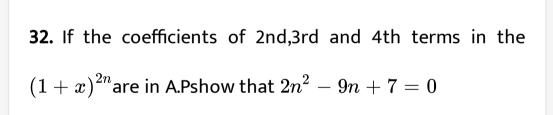
29. Using the principle of mathematical induction ,prove that x^n-y^n is divisible by (x-y) for all $n\in N.$

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30. If z=x+iy and
$$w = rac{1-iz}{1+iz}$$
 such that |w|=1.then show

that z is purely real.

31. Find the rank of the word 'MOTHER' in dicitonary format.



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33. (2a,0) and (0,a) are the extremities of the base of an isosceles triangle ,and the equation of one of the equal

sides is x=2a.Find the equation o the other two sides and

the area of triangle.



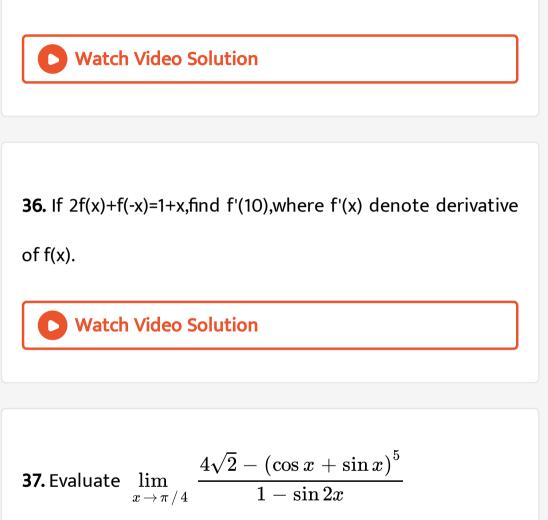
34. A variable straight line passes through the point of intersection of the staright lines x/a+y/b=1 and x/b+y/a=1 and intersects the axes at P and Q.Find the locus of midpoint of Pq.



35. The abscissae of two points A and B are the roots of the equation $x^2 + 2ax - b^2 = 0$ and their ordinates are

the equation $x^2 + 2px - q^2 = 0$.Find the equation and

the radis of the circle with AB as diameter.



38. Write the negation of each of the following statements:p:for every real numberx, $x^2 > x$.



39. Write the negation of each of the following statements:q:For every real number x,either x>1or x<1.



40. "Mathematics is fun"check whether this sentence is a

statement.



41. p: If x is a real number such that $x^3 + 4x = 0$, then x=0, prove that p is true statement , using method of contradiction

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42. p: If x is a real number such that $x^3 + 4x = 0$, then x=0, prove that p is true statement , using method of contraopositive.



43. A bag contains 5 white and 4 black balls. If 3 balls are drawn at random, find the probability that at least two of

them are white.



44. The arithmetic mean and standard deviation of 7 observations are respectively 8 and 4.If five of the observations are 2,4,10,12 and 14 then find the values of the remaining two

45. Prove that if $x = a(\cos heta + \sin heta \sin 2 heta)$ and

 $y = a(\sin \theta + \cos \theta \sin 2\theta)$,then show that

$${\left({x + y} \right)^{2\,/\,3}} + {\left({x - y} \right)^{2\,/\,3}} = 2{a^{2\,/\,3}}$$

46. Show that
$$3\left\{\sin^4\left(\frac{3\pi}{2}-lpha\right)+\sin^4(3\pi+lpha)\right\}-2\left\{\sin^6\left(\frac{\pi}{2}+lpha\right)+\sin^6(5\pi-lpha)\right\}=1$$

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47. Draw the graph of the solution set of the inequations

 $2x+y \geq 2$, $x-y \leq 1, x+2y \leq 8, x \geq 0$ and $y \geq 0$ also

shade the solution region .(graph paper not necessary).



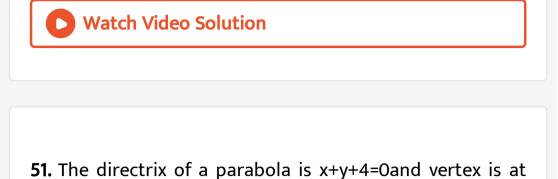
48. Find the number of permutations and the number of combinations in the letters of the word 'EXPRESSION' taken four at a time.

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49. Find the sum of the integers between 90 and 890 which are perfect squares.

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50. If z_1 and z_2 be two non-zero complex numbers such that $|z_1+z_2|=|z_1|+|z_2|$,then prove that $argz_1-argz_2=0.$



(-1,-1).Find the position of the focus and the equation of parabola.

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52. Prove tha the major axis of an ellipse is greater than its

minor axis.



53. Find the eccentricity of a hyperbola whose conjugate

axis and latus rectum are equal.

