



MATHS

BOOKS - OSWAAL PUBLICATION

SAMPLE PAPER 7



1. Find the 20^{th} term from end of the sequence

3,8,13 253.

2. Write the following sets in the set-builder

form: $\{1, 4, 9, \dots, 100\}$



3. Describe the sample space for the indicated

experiments.

A coin is tossed three times and exactly one

head appears.



4. Prove that the following points are collinear (using the slope concept)

 $A=(3,\ -4), B=(\ -7,6), C=(\ -2,1)$

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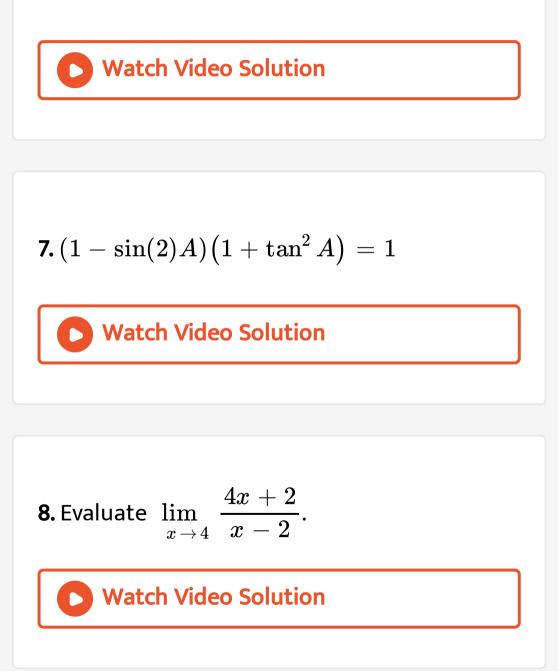
5. If R is the relation "is greater than" from A=

{2,3,4,5,6} to B={2,5,6}, write the elements of R.



6. Write the negation of statement "every

natural number is an integer"?



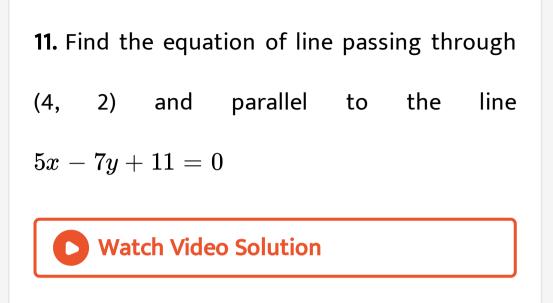
9. Find the least positive integer 'n' such that

$$\left(rac{1+i}{1-i}
ight)^n=1.$$

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10. How many 3 - digit numbers can be formed by using the digits 1 to 9 if no digit is repeated

?



12. set U={0,1,2,3,4,5,6,7,8,9},A={0,1,3,5,7},B=

{0,2,4,6,8},C={1,4,9}.Find

 $(A \cap B)$ ' and $(A \cap C)$ '.

13. Three are 4 men and 6 women in a city council.If one council member is selected for a committee at random how likely is it that it is women ?



14. Solve 7x + 3 < 5x + 9. Show the graph of

the solution on number line.

15. Find the degree measure of the angle subtended at the centre of a circle of radius 100 cm by an arc of length 22 cm (Use $\pi = \frac{22}{7}$)

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16. Let
$$f(x) = \sqrt{x}$$
 and $g(x) = x$ be two

functions defined over the set of non-negative

real numbers. Find
$$(f+g)(x), (f-g), (fg)(x)$$
 and $\left(\frac{f}{g}\right)(x).$

17. Check the validity of the statements

(i) 200 is multiple of 4 and 5

(ii) 240 is a multiple of 3 or 5

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18. Check the validity of the statements

(i) 200 is multiple of 4 and 5

(ii) 240 is a multiple of 3 or 5

19. Prove that the points (2, -5) & (-1, 4) are equidistant from the line 3x + y - 5 = 0.



20. Find real value of heta for which $\displaystyle rac{3+2i\sin heta}{1-2i\sin heta}$

is purely real.

21. Define finite and infinite set with suitable examples. Watch Video Solution 22. Evaluate $\lim_{x o 1} \, rac{x^{15}-1}{x^{10}-1}.$ Watch Video Solution

23. Prove that : $\sin 3x = 3 \sin x - 4 \sin^3 x$

24. Show that the pointsA(0, 7, 10), B(-1, 6, 6) and C(-4, 9, 6)from a right angled triangle.Watch Video Solution

25. A box contains 10 red marbles,20 blue marbles and 30 green marbles.5 marbles are drawn from the box.What is the probability that(i)all will be blue



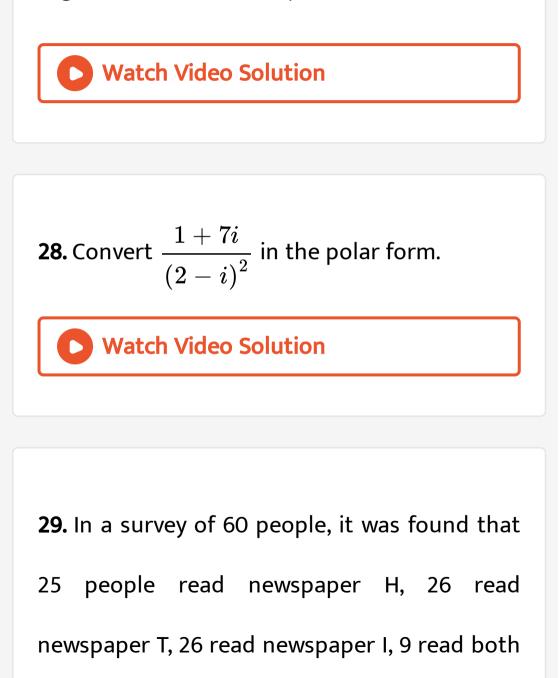
26. A box contains 10 red marbles, 20 blue marbles and 30 green marbles. 5 marbles are drawn from the box.What is the probability that (1) all will be blue ? (ii) atleast one will be green?

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27. Find four numbers forming a geometric progression in which the third term is greater

than the first term by 9, and the second term

is greater than the $4^{
m th}$ by 18.



H and I, 11 read both H and T, 8 read both T

and I, 3 read all three newspapers. Find:

the number of people who read at least one of

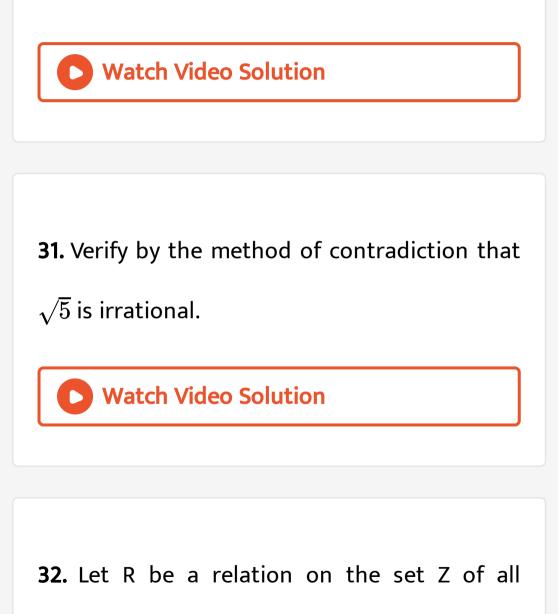
the newspapers.



30. In a survey of 60 people, it was found that 25 people read newspaper H, 26 read newspaper T, 26 read newspaper I, 9 read both H and I, 11 read both H and T, 8 read both T and I, 3 read all three newspapers. Find:



newspaper.



integers defined by:(x,y) in $R \Rightarrow (x-y)$ is

divisible by n is eqivalence

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33. Let R be a relation on the set Z of all integers defined by:(x,y) in $R \Rightarrow (x - y)$ is divisible by n.Prove that (b) $(x,y) \in R \Rightarrow (y,x) \in Rf$ or $allx, y, z \in Z$.

34. Find the derivative of $f(x) = \frac{2x+3}{x-2}$

from the first principle.

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35. Let
$$z_1=2-I, z_2=-2+i$$
, Find
(i) $\left(Rerac{z_1z_2}{ar{z}_1}
ight)$, (ii) $Imigg(rac{1}{z_1ar{z}_1}igg)$

36. Let
$$z_1=2-I, z_2=-2+i$$
, Find (i) $\left(Rerac{z_1z_2}{ar{z}_1}
ight)$, (ii) $Im\left(rac{1}{z_1ar{z}_1}
ight)$

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37. Find the value of n such that

$$^{n}P_{5}=42^{n}P_{3},n>4$$

38. If the sum of n terms of an A . P is $3n^2 + 5n$

and its m^{th} term is 164 , find the value of m.



39. For any real number of x and y, $\cos x = \cos y$,prove that $x = 2n\pi \pm y$ where $n \in Z$

40. Find the equation of the hyperbola where foci are $(0, \pm 12)$ and the length of the latus rectum is 36.



41. Find the Middle terms in

$$\left(2x^2-rac{1}{\sqrt{x}}
ight)^{11}$$

42. In a lottery 10,000 tickets are sold and ten equal prizes are awarded.What is the probability of not getting a prize if you buy(i) 1ticket.

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43. In a lottery 10,000 tickets are sold and ten equal prizes are awarded.What is the probability of not getting a prize if you buy(ii) 2 tickets.



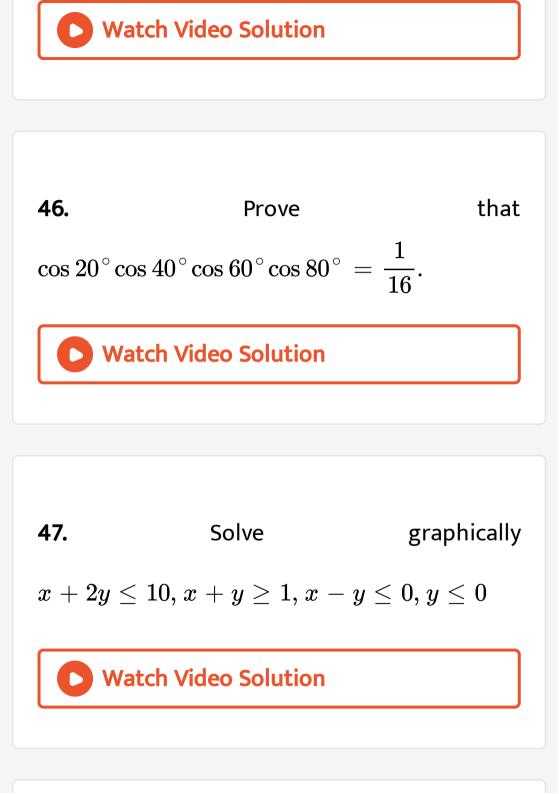
44. In a lottery 10,000 tickets are sold and ten equal prizes are awarded.What is the probability of not getting a prize if you buy 10 tickets.

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45. Define constant function.Draw the graph of

constant function.Write the domain and range

of the function.



48. Prove that $\lim_{\theta \to 0} \frac{\sin \theta}{\theta} = 1$, (θ being in radians) and hence show that $\lim_{\theta \to 0} \frac{\tan \theta}{\theta} = 1$

?

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49. Derive an expression for the co-ordinates of points that divides the linejoining points $A(x_1, y_1, z_1)$ and $B(x_2, y_2, z_2)$ internally in the ratio m:n.Hence find the co-ordinates of midpoint of AB where A=(3,2,1) and B=(7,6,5).



50. Derive the equation for straight line in normal form.Hence find the equation of line p=2 and $\omega = 60^{\circ}$.

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51. State and prove Bionomial theorem for any

positive integer n.



52. Find the number of arrangements of the letters of the work "EXAMINATION". In how many of these arrangements.

(i) do the word, start with M.

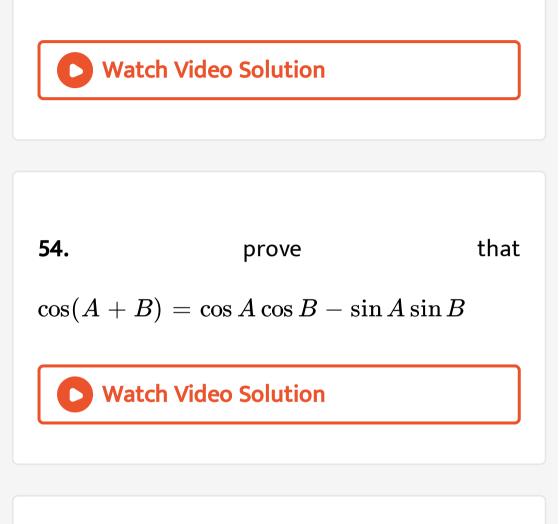
(ii) do all the vowels always occur together.

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53. Find the number of arrangements of the letters of the word INDEPENDENCE. In how

many of these arrangements,

do all the vowels always occur together



55. Find the sum to 'n' terms if n^{th} term is given by $n^2 + 2^n$

