



# MATHS

# **BOOKS - S CHAND MATHS (ENGLISH)**

# **MODEL TEST PAPER-19**



1. Value of 
$$\frac{\tan^2 15^\circ - 1}{\tan^2 15^\circ + 1}$$
A. 
$$\frac{1}{2}$$
B. 
$$\frac{\sqrt{3}}{2}$$
C. 
$$-\frac{\sqrt{3}}{2}$$
D. 
$$\frac{1}{\sqrt{3}}$$

### Answer: C



**2.** In  $\Delta$  ABC if  $\angle C=75^\circ, \angle B=45^\circ, a=2$ , then b equals to

A. 
$$\frac{4}{\sqrt{6}}$$
  
B. 
$$\frac{\sqrt{6}}{4}$$

C. 1

D. None of these

#### Answer: A

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**3.** Let  $A = \{p, q, r\}$  and  $B = \{1, 2\}$ . Then the number of relations from A to B is

A. 32

:

B. 8

C. 4

D. 64

Answer: D

**D** View Text Solution

4. Which term of the A.P. 10 - 8i, 8 - 6i, 6 - 4i,....is purely real ?

A.  $5^{th}$  term

B.  $6^{th}$  term

C.  $4^{th}$  term

D. None of these

Answer: A

5. Solution of :  $-x^2 + 6x - 5 \ge 0$  is

A. [5, 1]

B. [5, 1)

C. (1, 5)

D. [1, 5]

#### Answer: D

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**6.** The sum of the components of a and b in the expansion of  $(a+b)^n$  is

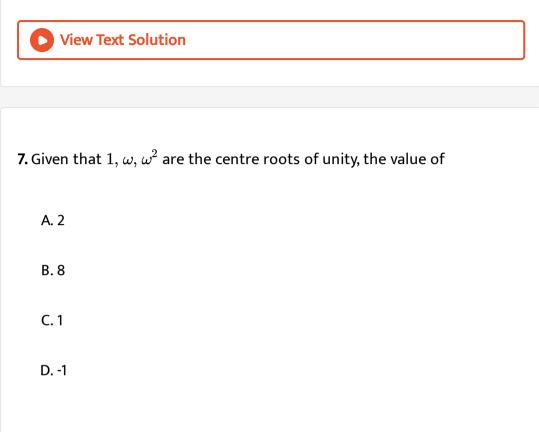
A. n

 $\mathsf{B.}\,n^2$ 

C. 2n

D. n + 1

## Answer: A



#### Answer: C

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8. If the line  $y=\sqrt{3}x+k$  touches the circle  $x^2+y^2=16$ , then the value of k is

A. 16

B. 8

C. + 8

D. + 16

#### Answer: C

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9. Evaluate : 
$$\lim_{x o 2} rac{\sqrt{2x}-2}{x-2}$$

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10. Differentiate with respect to 'x' :  $x^4 + 4^x + \log x$ .

**11.** A coin is tossed. If it shows a tail, we draw a ball from a bag containing 2 Red and 3 Green balls. If it shows head, we draw a ball from a bag containing 1 Blue and 1 White ball. Write the sample space. Also find the n(S).

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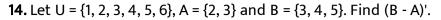
**12.** How many numbers of 6 digits can be formed out of the digits of the

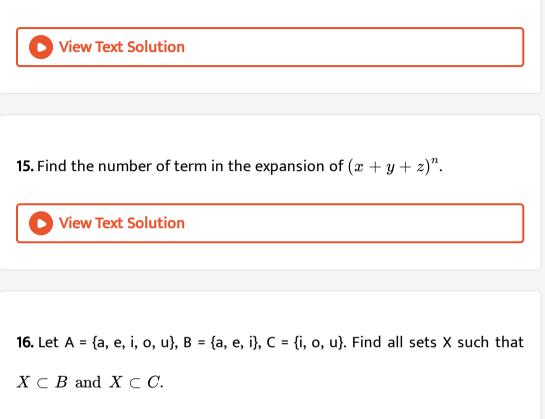
number 567724 ?

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**13.** Find the equation of a line parallel to y-axis and at a distance of 7

units to the left of y-axis.



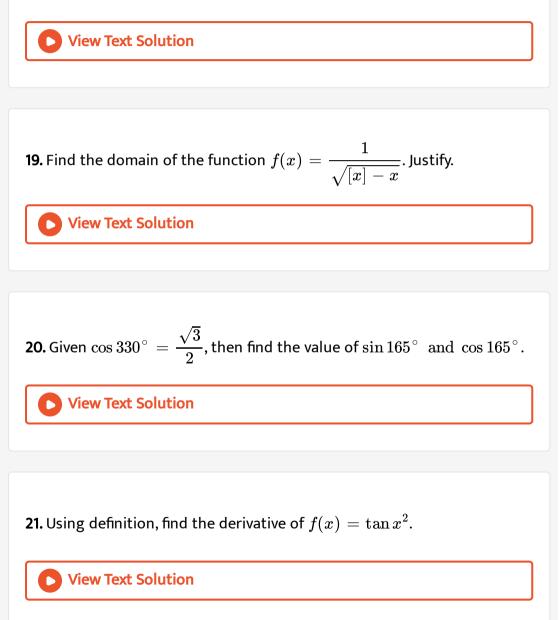


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**17.** Find the principal solution of the equation  $\cot x = -1$ 

18. If x is real, prove that  $5x^2 - 8x + 6$  is always positive and find its

minimum value.



22. Find the set of values of x for which the inequalities  $x^2 - 3x - 10 < 0.$ 

 $10x - x^2 - 16 > 0$  hold simultaneously.

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23. If 
$$\frac{2}{3} = \left(x - \frac{1}{y}\right) + \left(x^2 - \frac{1}{y^2}\right) + \dots$$
 to  $\infty$  and xy = 2, then find the

value of x and y with the condition that |x| < 1.

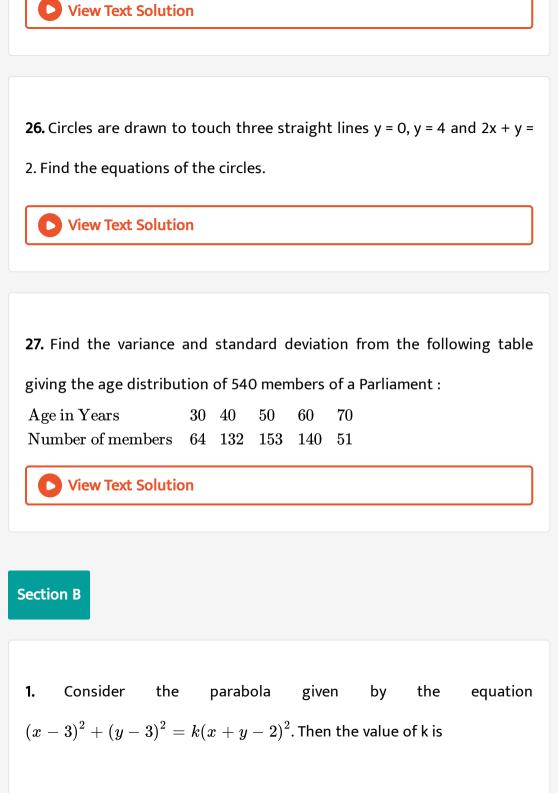
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**24.** Find the sum of : 2 + 5 + 10 + 17 + 26 + ... to n terms.



25. Find the area of the triangle formed by the lines whose equations are

2y - x = 5, y + 2x = 7 and y - x = 1.



A. 1

B. 2

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

D. None of these

#### Answer: C

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2. The foci of the hyperbola 
$$\frac{(x-1)^2}{25} - \frac{(y+1)^2}{16} = 1$$
 are :  
A.  $(1 + \sqrt{41}, -1)$   
B.  $(-1, 1 + \sqrt{41})$   
C.  $(-1 + \sqrt{41}, -1)$   
D.  $(1, -1 + \sqrt{41})$ 

#### Answer: A

**3.** Distance between the points (7, 4, -5) and (1, 6, -2) is

A. 5 units

B. 4 units

C.1 units

D.7 units

#### Answer: D

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**4.** 
$$9x^2 - 24xy + 16y^2 - 6x + 8y - 5 = 0$$
 represent a

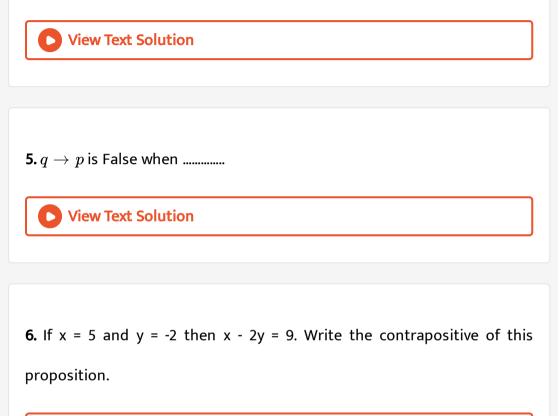
A. parabola

B. circle

C. ellipse

D. hyperbola

Answer: A



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8. Find the area of the triangle formed by the lines joining the vertex of the parabola  $x^2 = 12y$  to the ends of its latus rectum.



**9.** Find the equation of hyperbola having foci (+4, 0) and length of the latus rectum is 12.

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**10.** Find the ratio in which the zx plane divides the join of the points (2, 4,

5) and (3, -6, 8). Find also the co-ordinates of the point of intersection of join and the zx plane.



**1.** If u = ax + b, u = cy + d, then Cov(u, v) = k Cov(x, y). Value of k is

A. 
$$\frac{a}{c}$$
  
B.  $\frac{c}{a}$ 

C. ac

D. None of these

## Answer: C

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**2.** If 
$$rac{1}{4} \leq |r| < rac{3}{4}$$
 , then correlation is said to be

A. High degree

- B. Low degree
- C. Moderate degree
- D. None of these

### Answer: C



**3.** If m items have common rank, the correction to be added is  $k(m^3-m).$  Value of k is



B. 
$$\frac{1}{10}$$
  
C. 12  
D.  $\frac{1}{12}$ 

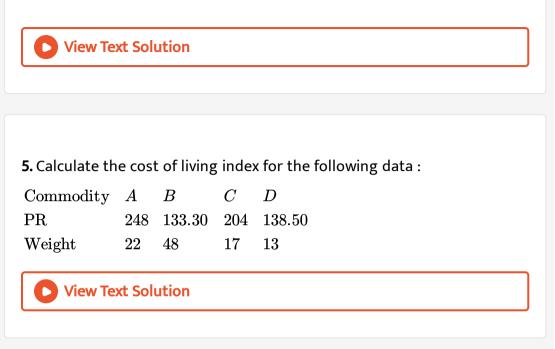
Answer: D



4. During a certain period, the cost of living index number goes from 110

to 200 and the salary of a worker is also raised from Rs. 325 to Rs. 500. So

the worker actually.....in real term.



6. Calculate the coefficient of correlation between x and y series from the

following data :

$$\sum_{i=1}^{12}{(x_i-ar{x})^2}=360,\,\sum_{i=1}^{12}{(y_i-ar{y})^2}=250\, ext{ and }\,\sum_{i=1}^{12}{(x_i-ar{x})(y_i-ar{y})}=228$$

7. Calculate Cov(x, y), given  

$$\sum x_i = 50, \sum y_i = -30, \sum x_i y_i = 50, n = 5.$$
  
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**8.** Find the mode from the following frequency distribution :

Output (in Units)	300 - 309	310 - 319	320 - 329	330 - 339	340 - 3				
No. of workers	9	20	24	38	48				
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9. The scores on a reading comprehension test of 1000 students are given

below :											
Score (out of $75$ )	0-5	5 - 10	10-15	15-20	20-25	25-30	30				
Frequency	6	12	50	120	225	250	18				
Find the median score.											

10. Obtain the five-year moving averages for the following series of

## observations :

Year20072008200920102011201220132014Annual sales (Rs. '000)3.64.34.33.44.45.43.42.4Display these and the original figures on the same graph.