

**Class: 11**  
**Subject: Math's**  
**Topic: Straight Lines**  
**No. of Questions: 25**

1. The point (2, 3) undergoes the following three transformation successively.
- (i) reflection about the line  $y = x$
  - (ii) translation through a distance 2 units along the positive direction of  $y$ -axis
  - (iii) rotation through an angle of  $45^\circ$  about the origin in the anticlockwise direction

The final co-ordinates of the point are

- A.  $\left(\frac{1}{\sqrt{2}}, \frac{7}{\sqrt{2}}\right)$
- B.  $\left(-\frac{1}{\sqrt{2}}, \frac{7}{\sqrt{2}}\right)$
- C.  $\left(\frac{1}{\sqrt{2}}, -\frac{7}{\sqrt{2}}\right)$
- D. None of these

2. The lines  $px + qy + r = 0$ ,  $qx + ry + p = 0$ ,  $rx + py + q = 0$  are concurrent if
- A.  $p + q + r = 0$
  - B.  $p^2 + q^2 + r^2 + pq + qr + rp = 0$
  - C.  $p^2 + q^2 + r^2 + 3pqr = 0$
  - D. all of the above

3. The straight lines  $x + y = 0$ ,  $3x + y - 4 = 0$  and  $x + 3y - 4 = 0$  form which of the following triangles?
- A. Isoscles
  - B. Equilateral
  - C. Right-angled
  - D. None of these

4. The vertices of  $\Delta$  are  $(0, 0)$ ,  $(3, 0)$  and  $(0, 4)$ . Its orthocentre is at
- A.  $(0, 0)$
  - B.  $(1, 4/3)$
  - C.  $(3/2, 2)$
  - D. None of these
5. One of the equations of lines passing through the point  $(3, -2)$  and inclined at  $60^\circ$  to the line  $\sqrt{3}x + y = 1$  is
- A.  $y + 2 = 0$
  - B.  $x + 2 = 0$
  - C.  $x + y = 2$
  - D.  $x - y = \sqrt{3}$
6. A straight line through the point  $(2, 2)$  intersects the lines  $\sqrt{3}x + y = 0$  and  $\sqrt{3}x - y = 0$  at the points A and B. The equation to the line AB so that the triangle OAB is equilateral, is
- A.  $x - 2 = 0$
  - B.  $y - 2 = 0$
  - C.  $x + y - 4 = 0$
  - D. none of these
7. The incentre of a triangle with vertices  $(1, \sqrt{3})$ ,  $(0, 0)$  and  $(2, 0)$  is
- A.  $\left(1, \frac{\sqrt{3}}{2}\right)$
  - B.  $\left(\frac{2}{3}, \frac{1}{\sqrt{3}}\right)$
  - C.  $\left(\frac{2}{3}, \frac{\sqrt{3}}{2}\right)$
  - D. None of these

8. If the sum of the slopes of the lines given by  $x^2 - 2cxy - 7y^2 = 0$  is four times their product then  $c$  has the value
- A. 2
  - B. -1
  - C. 1
  - D. -2

9. A line passes through point  $(4, 1)$  and is perpendicular to line  $3x + y = 3$ , then its  $x$  - intercept is

- A.  $\frac{1}{3}$
- B.  $\frac{2}{3}$
- C. 1
- D.  $\frac{4}{3}$

10. The value of  $\lambda$  for which the equation  $x^2 - \lambda xy + 2y^2 + 3x - 5y + 2 = 0$  may represent a pair of straight lines is

- A. 2
- B. 3
- C. 4
- D. 1

11. The equation of base of an equilateral triangle is  $x + y = 2$  and the vertex opposite to this base is  $(2, -1)$ . Then the length of the side of triangle equals

- A.  $\sqrt{\frac{1}{3}}$
- B.  $\sqrt{3}$
- C.  $\sqrt{\frac{2}{3}}$
- D.  $\sqrt{\frac{3}{2}}$

12. If the distance between lines  $5x + 12y - 1 = 0$  and  $10x + 24y + k = 0$  is 2, what is the value of  $k$ ?
- A. 54 only  
B. 50 only  
C. 54, 50  
D. 53 only
13. Foot of perpendicular drawn from  $(0, 5)$  in the line  $3x - 4y - 5 = 0$  is
- A.  $(3, 2)$   
B.  $(3, 1)$   
C.  $(1, 3)$   
D.  $(2, 3)$
14. Let  $P(-1, 0)$ ,  $Q(0, 0)$  and  $R(3, 3\sqrt{3})$  be three points. Then the equation of the bisector of the angle PQR is
- A.  $\frac{\sqrt{3}}{2}x + y = 0$   
B.  $x + \sqrt{3}y = 0$   
C.  $\sqrt{3}x + y = 0$   
D.  $x + \frac{\sqrt{3}}{2}y = 0$
15. If the lines  $x + 2ay + a = 0$ ,  $x + 3by + b = 0$  and  $x + 4cy + c = 0$  are concurrent, then  $a, b, c$  are in
- A. A.P  
B. H.P  
C. G.P  
D. None of these
16. The equation of line parallel to  $x$ -axis and bisecting the join of  $(1, 4)$  and  $(-2, 6)$  is
- A.  $y = 5$   
B.  $y = 3$   
C.  $y + 1 = 0$   
D.  $x = 5$

17. The line formed by joining  $(-1, 1)$  and  $(5, 7)$  is divided by a line  $x + y = 4$  in the ratio
- A. 1 : 2  
B. 1 : 3  
C. 3 : 4  
D. 1 : 4
18. If the points  $(1, 2)$  and  $(3, 4)$  were to be on the same side of line  $3x - 5y + a = 0$ , then
- A.  $7 < a < 11$   
B.  $a = 7$   
C.  $a = 11$   
D.  $a < 7$  or  $a > 11$
19. The extremities of diagonal of a parallelogram are the points  $(3, -4)$  and  $(-6, 5)$ . If the third vertex is  $(-2, 1)$ , then the fourth vertex will be
- A.  $(0, 1)$   
B.  $(1, 0)$   
C.  $(1, 1)$   
D.  $(-1, 0)$
20. Orthocentre of the triangle formed by the lines  $x + y = 1$  and  $xy = 0$  is
- A.  $(0, 0)$   
B.  $(0, 1)$   
C.  $(1, 0)$   
D.  $(-1, 1)$
21. If three points  $(h, 0)$ ,  $(a, b)$  and  $(0, k)$  lie on a line, show that  $\frac{a}{h} + \frac{b}{k} = 1$
22.  $p(a, b)$  is the mid point of a line segment between axes. Show that equation of the line is
- $$\frac{x}{a} + \frac{y}{b} = 2$$
23. The line  $\perp$  to the line segment joining the points  $(1,0)$  and  $(2,3)$  divides it in the ratio  $1 : n$  find the equation of line.

24. A line is such that its segment between that lines  $5x-y+4=0$  and  $3x+4y-4=0$  is bisected at the point  $(1,5)$  obtain its equation.
25. Find the equation of the lines which pass through the point  $(4,5)$  and make equal angles with the lines  $5x-12y+6=0$  and  $3x-4y-7=0$

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