EXERCISE - 7.3

State whether the following statements are true false. Justify your answer

1. Name the type of triangle formed by the points $\mathbf{A}(-5, 6), \mathbf{B}(-4, -2),$ and $\mathbf{C}(7, 5)$.

2. Find the points on the x-axis which are at a distance on $2\sqrt{5}$ from the point$(7, -4)$. How many such points are there?

3. What type of a quadrilateral do the points $\mathbf{A}(2, -2), \mathbf{B}(7, 3), \mathbf{C}(11, -1),$ and $\mathbf{D}(6, -6)$ taken in that order,form?

4. Find the value of a, if the if the distance between the points $\mathbf{A}(-3, -14)$ and $B(a, -5)$ is 9 units.

5. Find a point which is equidistant from the points $\mathbf{A}(-5, 4)$ and $(-1, 6)$? How many such points are there ?

6. Find the coordinates of the point $\mathbf{Q}$ on the x-axi which lies on the perpendicular bisector of the line segment joining the points $\mathbf{A}(-5, -2)$ and $B(4, -2)$.Name the type of triangle formed by points $\mathbf{Q}, \mathbf{A}$ and $\mathbf{B}$.

7. Find the value of m if the points $(5, 1), (-2, -3)$ and $(8, 2m)$ are collinear.

8. If the point $\mathbf{A}(2, -4)$ is equidistant from $\mathbf{P}(3, 8)$ and $\mathbf{Q}(-10, y)$, find the values of y, Also find distance $\mathbf{PQ}$.

9. Find the area of the triangle whose vertices are $(-8, 4), (-6, 6)$ and $(-3, 9)$.

10. In what ratio does the x-axis divide the line segment joining the points $(-4, -6)$ and $(-1, 7)$? Find the coordinats of the point of division.

11. Find the ratio in which the point $\mathbf{P}\left(\frac{3}{4}, \frac{5}{12}\right)$ divides the line segment joining the points $\mathbf{A}\left(\frac{1}{2}, \frac{3}{2}\right)$ and $B(2, -5)$.

12. If $\mathbf{P}(9a-2, -b)$ divides line segment joining $\mathbf{A}(3a+1, -3)$ and $\mathbf{B}(8a, 5)$ in the ratio 3:1,find the values of a and b.

13. If (a, b) is the mid-point of the line segment joining the point $\mathbf{A}(10, -6)$ and $\mathbf{B}(k, 4)$ and $a - 2b = 18$, find the value of and the distance $\mathbf{AB}$.

14. The centre of a circle is $(2a, a - 7)$. Find the values of a if the circle passes through the point $(11, -9)$ and has diameter $10\sqrt{2}$ units.

15. The line segment joining the points $\mathbf{A}(3, 2)$ and $\mathbf{B}(5, 1)$ is divided at the point $\mathbf{P}$ in the ratio 1:2 and it lies $3x - 18y + k = 0$, Find the value of k

16. If $\mathbf{D}\left(\frac{-1}{2}, \frac{5}{2}\right), \mathbf{E}(7, 3)$ and $\mathbf{F}\left(\frac{7}{2}, \frac{7}{2}\right)$ are the midpoints of sides of $\triangle\mathbf{ABC}$, find the area of the $\triangle\mathbf{ABC}$.

17. The points $\mathbf{A}(2, 9), \mathbf{B}(a, 5)$ and $\mathbf{C}(5, 5)$ are the verices of a triangle $\mathbf{ABC}$ right angled at $\mathbf{B}$. Find the values of a and hence the area of $\triangle\mathbf{ABC}$.

18. Find the coordinates of the point $\mathbf{R}$ on the line segment joining the points $\mathbf{P}(-1, 3)$ and $\mathbf{Q}(2, 5)$ such that $\mathbf{PR} = \frac{3}{5}\mathbf{PQ}$.

19. Find the velues of k if the points $\mathbf{A}(k+1, 2k), \mathbf{B}(3k, 2k+3)$ and $\mathbf{C}(5k - 1, 5k)$ are collinear

20. Find the ratio in which the line 2x+3y-5=0 divides the line segment joining the points $(8, -9)$ and $(2, 1)$. Also find the coordinates of the point of division,

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