3.1 The Cartesian Coordinate System Practice Problems

1. Is $(3, 2)$ on the graph of $x^2 - y^3 = 1$?
2. Is $(0, 1)$ on the graph of $x^2 - y^3 = 1$?
3. Is $(0, -1)$ on the graph of $x^2 - y^3 = 1$?
4. Find the intercepts of the graph of $x^2 - y^3 = 1$.
5. Find the point on the x-axis that is equidistant to $(2, 5)$ and $(-1, 3)$.
6. Find the point on the y-axis that is equidistant to $(2, 5)$ and $(-1, 3)$.
7. Find the area of the triangle with vertices $A(-2, -5)$, $B(-2, 7)$, and $C(10, 10)$.
8. Show that the triangle whose vertices are $A(4, 15)$, $B(12, 7)$, and $C(-1, 2)$ is isosceles.
9. Sketch the graph of the circle defined by $(x + 5)^2 + y^2 = 16$. What are the center and radius of this circle?
10. Is the graph of $x^2 + 6x + y^2 - 10y + 26 = 0$ a circle? If so, find its center and radius.
11. Is the graph of $4x^2 - 8x + 4y^2 + 4y - 23 = 0$ a circle? If so, find its center and radius.
12. Is the graph of $x^2 - 2x + y^2 + 8y + 26 = 0$ a circle? If so, find its center and radius.
13. Describe the graph of $x^2 + 4x + y^2 + 10y + 29 = 0$.
14. A diameter of a circle has endpoints $(1, -2)$ and $(3, 6)$. Find an equation for the circle.
15. The center of a circle is $(5, -2)$, and circle passes through the point $(-2, 3)$. Find an equation for the circle.
16. **TRUE or FALSE:** The line through the points $(0, -1)$ and $(-1, 4)$ is perpendicular to the line through the points $(2, -8)$ and $(7, -7)$.
17. **TRUE or FALSE:** The line through the points $(-5, -7)$ and $(-8, -5)$ is parallel to the line through the points $(-7, 0)$ and $(-10, 2)$.
18. Find the intercept(s) of the graph of $(x - 1)^2 + (y + 5)^2 = 17$.
19. The center of a circle is $(4, -5)$ and the circle intersects the x-axis at 2 and 6. Find an equation for the circle.

20. For each point, determine if the point is inside, outside, or on the circle

$$(x+5)^2 + (y-3)^2 = 36.$$

(a) $(4, 2)$

(b) $(-5, 0)$

(c) $(1, 2)$

21. Which of the following are equations for the line through the points $P(1, 5)$ and $Q(2, -3)$?

(a) $y + 3 = -8(x - 2)$

(b) $y = -8x - 4$

(c) $y = -8(x - 1) + 5$

(d) $y + 3 = \dfrac{-1}{8}(x - 2)$

(e) $y + 3 = \dfrac{1}{8}(x - 2)$

(f) $y - 5 = \dfrac{-1}{8}(x - 1)$

(g) $y - 5 = \dfrac{1}{8}(x - 1)$

(h) $y - 5 = -8(x - 1)$

(i) $y + 5 = -8(x + 1)$

(j) $y - 5 = -8x - 1$

(k) $y - 5 = \dfrac{-1}{8}x - 1$

22. Find an equation for the line that is parallel to $y = \dfrac{5}{6}x + 4$ and passes through the point (0,12).

23. Find an equation for the line that is parallel to $y = \dfrac{5}{6}x + 7$ and contains the point (3,21).

24. Find an equation for the line that is perpendicular to $y = \dfrac{5}{6}x + 4$ and contains the point (0,14).