Classroom Voting Questions: Precalculus

The Coordinate Plane

1. Find the coordinates of the point which is 3 units below the x-axis and 4 units to the right of the y-axis.
   (a) (3, 4)
   (b) (−3, 4)
   (c) (4, −3)
   (d) (−4, −3)

2. In which quadrant is $x < 0$ and $y < 0$?
   (a) I
   (b) II
   (c) III
   (d) IV

3. Find the distance between (2, −5) and (6, −2).
   (a) 25
   (b) 5
   (c) $\sqrt{113}$
   (d) $\sqrt{23}$

4. Based upon the distances between each pair of points, we can conclude that the points (−5, 6), (0, 8), and (−3, 1) form the vertices of what kind of triangle?
   (a) Equilateral
   (b) Isosceles
   (c) Right
   (d) Both (b) and (c)
5. The endpoints of a line segment are \((1, -5)\) and \((-7, 4)\). What are the coordinates of the midpoint?

(a) \((-6, -1)\)
(b) \(4, 4.5\)
(c) \(8, -9\)
(d) \((-3, -5)\)

6. There is at least one point in the coordinate plane with \(x\)-coordinate \(-2\) which is at most 5 units from the point \((2, 3)\).

(a) True, and I am very confident.
(b) True, but I am not very confident.
(c) False, but I am not very confident.
(d) False, and I am very confident.

7. There is at least one point in the coordinate plane with \(x\)-coordinate \(-2\) and \(y\)-coordinate greater than 4 which is at most 5 units from the point \((2, 3)\).

(a) True, and I am very confident.
(b) True, but I am not very confident.
(c) False, but I am not very confident.
(d) False, and I am very confident.

8. Under what conditions will the distance from the point \((2, 3)\) to the point \((-2, y)\) be greater than 5 units?

(a) \(y > 6\)
(b) \(y < 1\)
(c) \(0 < y < 5\)
(d) None of the above.

9. Name the center and radius of the circle whose equation is \((x + 2)^2 + y^2 = 100\).

(a) Center = \((2, 0)\), radius = 10
(b) Center = \((-2, 0)\), radius = 100
(c) Center = \((0, 2)\), radius = 100
10. Find the center and radius of the circle given by the equation $x^2 + y^2 - 10x + 6y = 3$.

(a) Center: $(-5, 3)$; radius: 37
(b) Center: $(5, -3)$; radius: 37
(c) Center: $(-5, 3)$; radius: $\sqrt{37}$
(d) Center: $(5, -3)$; radius: $\sqrt{37}$

11. The point $(4, -1)$ is on the circle with center $(1, 2)$ and radius 5.

(a) True, and I am very confident.
(b) True, but I am not very confident.
(c) False, but I am not very confident.
(d) False, and I am very confident.

12. The point $(-8, -3)$ is on the graph of the equation $(x + 8)^2 + (y + 1)^2 = 4$.

(a) True, and I am very confident.
(b) True, but I am not very confident.
(c) False, but I am not very confident.
(d) False, and I am very confident.

13. A diameter of a circle has endpoints $(4, -3)$ and $(-2, 5)$. What is the equation of this circle?

(a) $(x - 1)^2 + (y - 1)^2 = 10$
(b) $(x - 1)^2 + (y - 1)^2 = 25$
(c) $(x + 1)^2 + (y + 1)^2 = 100$
(d) $(x - 3)^2 + (y + 1)^2 = 10$

14. The point $(1, 4)$ is inside of the graph of the circle described by the equation

$$(x - 3)^2 + (y + 1)^2 = 26.$$ 

(a) True, and I am very confident.
(b) True, but I am not very confident.
(c) False, but I am not very confident.
(d) False, and I am very confident.

15. Find the equation for the lower half of the circle whose equation is $x^2 + y^2 = 9$.

(a) $y = \sqrt{9 - x^2}$
(b) $y = -\sqrt{9 - x^2}$
(c) $x = \sqrt{9 - y^2}$
(d) $x = -\sqrt{9 - y^2}$