

Unit 6: Coordinate Geometry

ADVANCED

Name: _____ Date: _____

Show all work. Give each answer in exact, simplified form using plain-text notation (e.g., $3/4$, $\sqrt{41}$, $(3, -4)$).

1. Find the exact distance between the points A(-7, 4) and B(5, -11). Give the answer in simplest radical form.

Answer: _____

3. Point P lies on the directed segment from A(-4, -2) to B(11, 13) and divides it in the ratio AP:PB = 2:3. Find the coordinates of P.

Answer: _____

5. A circle has equation $x^2 + y^2 - 10x + 6y - 15 = 0$. By completing the square, find its radius.

Answer: _____

7. The endpoints of a diameter of a circle are (1, -2) and (9, 4). Find the radius of the circle.

Answer: _____

9. For the parabola $y^2 = -16x$, find the equation of the directrix.

Answer: _____

11. A triangle has vertices (1, 2), (7, 4), and (3, 10). Use the coordinates to find its area.

Answer: _____

2. M(4, -1) is the midpoint of segment AB. If A = (-3, 8), find the coordinates of endpoint B.

Answer: _____

4. Line m passes through (-5, 2) and (7, -4). Find the slope of any line perpendicular to m.

Answer: _____

6. A circle has equation $x^2 + y^2 + 8x - 12y + 3 = 0$. By completing the square, find the coordinates of its center.

Answer: _____

8. For the parabola $x^2 = 20y$, find the coordinates of the focus.

Answer: _____

10. The point (5, -3) is rotated 90° counterclockwise about the origin, and then the image is translated by the vector (-2, 4). Find the coordinates of the final image point.

Answer: _____

12. A circle has equation $(x - 3)^2 + (y + 5)^2 = 169$. Find the distance from the center of the circle to the point (15, 0).

Answer: _____