2.1 - The Coordinate Plane and 2.2 - Graphs of Equations

Review problems

1. **Plotting points in a coordinate system.** Plot these points in a coordinate system: $(0, 0)$, $(-5, 3)$, $(2, 0)$ $(\sqrt{2}, \sqrt[3]{8})$, $(0, -4)$,

2. **Simplifying radicals and rational expressions.** Simplify:
   (a) $\sqrt{3^2 + 4^2}$ (b) $\dfrac{4x - 6x^2}{2x^3}$ (c) $\dfrac{\sqrt{x^2 + 4x + 4}}{\sqrt{x^2 + 4}}$ (assume $x > 0$)

Basic knowledge

3. Find the midpoint of segment AB and distance between A and B:
   (a) $A(2, -5)$, $B(-1, 3)$ (b) $A\left(\frac{1}{3}, -\frac{3}{4}\right)$, $B\left(\frac{2}{3}, -\frac{3}{2}\right)$

4. Find the center, radius, and all intercepts of the circle $(x - 3)^2 + (y + 1)^2 = 4$.

5. Write an equation of a circle whose center is $(6, -\sqrt{2})$, and diameter is 10.

6. Find intercepts of $x = y^3 - 8y$

Intermediate/Advanced

7. Find the midpoint of segment AB and distance between A and B:
   $A(\sqrt{2}, 2\sqrt{5})$, $B(3\sqrt{2}, -\sqrt{5})$

8. Find the point on the x-axis that is equidistant from the point $(-5, 2)$ and $(2, 3)$.

9. Find an equation of a circle whose center is at $(-4, 1)$ and its area is 7.