

MATH 190 REVIEW FOR TEST #3

Instructions:

- (1) **No calculators!**
- (2) **All answers must be fully reduced/simplified!**
- (3) **Each problem is worth 10 points. So show ALL your work for full credit.**

1. Use Cramer's Rule to solve the following system for x , DO NOT SOLVE FOR y or z . (No credit given for any other method).

$$\begin{cases} x + y - z = 2 \\ x - y - z = -6 \\ x - 2y + z = 0 \end{cases}$$

2. Solve the following system of equations:

$$\begin{cases} x + 2y = 8 \\ x^2 + y^2 = 16 \end{cases}$$

3. Find the midpoint of the line segment joining $(3, 7)$ and $(6, 3)$.
4. Find the distance between the points $P(3, 7)$ and $Q(6, 3)$.
5. Using your answers to problems 3) and 4), or otherwise, find the equation of the circle whose endpoints of its diameter are $(3, 7)$ and $(6, 3)$.
6. Find the center and radius of the circle whose equation is $4x^2 + 8y = 11 + 4x - 4y^2$.
7. Find the equation of the circle with center $(-1, 3)$ that passes through the point $(4, 3)$.
8. Sketch the graph of the parabola $y = x^2 + 5x + 6$ by first finding and labeling the coordinates of its vertex and intercepts.
9. Sketch the graph of the parabola $y = 6 - 5x - x^2$ by first finding and labeling the coordinates of its vertex and intercepts.
10. Sketch the graph of the parabola $y = 30x^2 + 40x$ by first finding and labeling the coordinates of its vertex and intercepts.
11. Solve the following quadratic equation: $x^2 - 4x + 1 = 0$.
12. Solve the following quadratic equation: $\frac{1}{6}x^2 + x = \frac{4}{3}$.
13. Solve the following equation: $2x^3 + 2x^2 - 3x = 0$.
14. Solve for x : $2x^2 = 5x$