

Review Sheet 3

Solve for x , y , and z . Express your answer as an ordered triple.

$$\begin{array}{l} x - y + 4z = 21 \\ 1) \quad 4x + 2y + z = 21 \\ \quad \quad -3x + y - z = -12 \end{array} \qquad \begin{array}{l} x + 5y - 5z = 3 \\ 2) \quad -2x + 3y + z = -5 \\ \quad \quad x + y + 5z = -19 \end{array}$$

Put the equation of the circle in standard form and identify the center and radius of the circle. Then graph the circle, labeling 4 points.

$$3) \quad x^2 - 4x + y^2 + 2y - 56 = 0 \qquad 4) \quad x^2 + y^2 - 10x + 14y + 2 = 0$$

Find the vertex, the roots (simplest form), and the y intercept of the given function. Then graph the parabola, labeling all the points.

$$5) \quad y = -3x^2 + 12x - 8 \qquad 6) \quad y = 2x^2 - 8x + 3$$

Solve the equation and round to the nearest hundredth.

$$7) \quad 10^{x+1} = 1846 \qquad 8) \quad e^{x-4} = 275$$

Evaluate the logarithm without using a calculator.

$$9) \quad \log_2(4\sqrt{16}) \qquad 10) \quad \log_6\left(\frac{1}{1296}\right)$$

Solve the nonlinear system of equations. Express your answer(s) as ordered pairs.

$$11) \quad \begin{array}{l} x^2 - y^2 = 3 \\ 2x + y^2 = 5 \end{array} \qquad 12) \quad \begin{array}{l} x^2 + y^2 = 5 \\ x - y^2 = -3 \end{array}$$

Rewrite the expression in $a + bi$ form:

$$13) \quad \frac{6+2i}{-9-7i} \qquad 14) \quad \frac{4+i}{2-5i}$$

Simplify the complex fraction.

$$15) \quad \frac{\frac{6}{b^2} + \frac{1}{b}}{\frac{36}{b^2} - 1} \qquad 16) \quad \frac{\frac{2}{x} + \frac{1}{y}}{\frac{x}{3} - \frac{y}{4}}$$

For the given angle θ in 17) and 18), answer the following questions a) – e).

- a.** What quadrant does θ belong? **b.** Find an angle coterminal to θ that is greater than 360° . **c.** In degrees, what is the measure of the reference angle? **d.** Calculate the exact value of $\sin(\theta)$. **e.** Calculate the exact value of $\tan(\theta)$.

$$17) \quad \theta = -\frac{4\pi}{3} \qquad 18) \quad \theta = \frac{19\pi}{6}$$

Find the values of the 5 remaining trigonometric functions of θ if

$$19) \quad \tan(\theta) = -\frac{7}{9} \text{ and } \cos(\theta) < 0 \qquad 20) \quad \cos(\theta) = \frac{15}{17} \text{ and } \sin(\theta) < 0$$

21) On top of a 500 ft building, Batman sees a crime happening below. The angle of depression from Batman to the crime is 73° . How far away from the base of the building is the crime happening? Round to the nearest tenth.

22) You are standing 325 feet away from a building. The angle of elevation to the top of the building is 47° . How tall is the building? Round to the nearest tenth.

Find the exact solutions for x such that $x \in [0, 2\pi)$.

$$23) \quad 2 \sin(x) = -1 \qquad 24) \quad 4 \cos(x) = 2\sqrt{2}$$