**Review Sheet 3**

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

1) In $\triangle ABC$ $\measuredangle C$ is a right angle, a = 4.2, and c = 8.6.
   a) Find the measure of b
   b) Find the measure of $\measuredangle B$
   c) Find the measure of $\measuredangle A$

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) $x^2 - 4x + y^2 + 2y - 56 = 0$

4) $x^2 + y^2 - 10x + 14y + 2 = 0$

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

5) $y = -3x^2 + 12x - 8$

6) $y = 2x^2 - 8x + 3$

Solve the equation and round to the nearest hundredth.

7) $10^{x+1} = 1846$

8) $e^x = 275$

Evaluate the logarithm without using a calculator.

9) $log_2\left(4\sqrt{16}\right)$

10) $log_6\left(\frac{1}{1296}\right)$

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

11) $\begin{matrix} x^2 - y^2 = 3 \\ 2x + y^2 = 5 \end{matrix}$

12) $\begin{matrix} x^2 + y^2 = 5 \\ x - y^2 = -3 \end{matrix}$

Rewrite the expression in a + bi form:

13) $\frac{6+2i}{-9-7i}$

14) $\frac{4+i}{2-5i}$

Simplify the complex fraction.

15) $\frac{\frac{6}{b^2}+\frac{1}{b}}{\frac{36}{b^2}-1}$

16) $\frac{\frac{2}{x}+\frac{1}{y}}{\frac{3}{y}-\frac{4}{x}}$

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

**a.** What quadrant does $\theta$ belong?

**b.** Find an angle coterminal to $\theta$ 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) $\theta = -\frac{4\pi}{3}$

18) $\theta = \frac{19\pi}{6}$

Find the values of the 5 remaining trigonometric functions of $\theta$ if

19) $\tan(\theta) = -\frac{7}{9}$ and $\cos(\theta) < 0$

20) $\cos(\theta) = \frac{15}{17}$ 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) $2\sin(x) = -1$

24) $4\cos(x) = 2\sqrt{2}$