Review Sheet for Test #3

Express all answers in simplest form. Round to 4 decimal places where necessary.

1) For the given expression: state the quadrant the angle is located, the reference angle, and the exact value.
   a) $tan\left(-\frac{4\pi}{3}\right)$ b) $sec\left(\frac{15\pi}{4}\right)$ c) $cos\left(\frac{7\pi}{6}\right)$

2) Simplify the complex fraction: $\frac{\frac{10}{b}-\frac{7}{a}}{\frac{2}{a}+\frac{3}{b}}$

3) Put the equation of the circle in standard form and identify the center and radius. Then graph the circle, labeling 4 points.
   $y^2 - 2y + 14x + x^2 - 23 = 0$

4) Divide and express in standard complex number form: $\frac{3+9i}{6-6i}$

5) Solve the system of equations: $x^2 + 10x - y = -22$
   $y - 9x = 24$

6) Solve for x in simplest form: $3x^2 - 8x + 2 = 0$

7) Evaluate: a) $Log_7\left(\frac{1}{49}\right)$ b) $Log_{11}\left(\sqrt[4]{11}\right)$ c) $Log_5\left(25\sqrt[3]{5}\right)$

8) Solve: a) $7^{3x} = 49{,}395$ b) $e^x = 89$

9) Given $y = x^2 + 8x + 12$, state the x and y intercepts, the vertex, and then use the information to sketch the graph.

10) Given right triangle ABC, C is a right angle, c = 8.5, and b = 1.9.
    a) Calculate a b) Calculate $m\sphericalangle A$ c) Calculate $m\sphericalangle B$.

11) If $\csc(\theta) = \frac{12}{5}$ and $\cos(\theta) < 0$, find the exact values of 5 remaining trigonometric ratios for θ.

12) $\theta = \frac{4\pi}{3}$
    a) Name an angle, in degrees, that is negative and coterminal to θ.
    b) Name an angle, in degrees, that is positive and coterminal to θ.
    c) What quadrant does θ lie?

13) a) In ΔPQR, $\sphericalangle P = 60^o, \sphericalangle Q = 90^o, and\ PR = 42$ Find the exact value of the measure of $\overline{QR}$.
    b) In ΔPQR, $\sphericalangle P = 30^o, \sphericalangle Q = 90^o, and\ PQ = 17$ Find the exact value of the measure of $\overline{PR}$.
    c) In ΔPQR, $\sphericalangle P = 45^o, \sphericalangle Q = 90^o, and\ PR = 22$ Find the exact value of the measure of $\overline{PQ}$.

14) The angle of depression from the top of a lighthouse to a boat on the water is 24°. If the boat is 458 feet away from the base of the lighthouse, how tall is the lighthouse?

15) Zelda is flying a kite and lets out 54 feet of string. The angle of elevation of the string is 49°. How high is the kite flying?