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) $csc\left(\frac{7\pi}{6}\right)$

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

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: $\dfrac{3+9i}{6-6i}$

5) Solve the system of equations: $\begin{aligned}x + 3y - 6z &= 7\\ 2x - y + 2z &= 0\\ x + y + 2z &= -1\end{aligned}$

6) Solve for the roots: $y = 5x^2 + 3x - 15$

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) Express as an expanded logarithm: $Log\left(\dfrac{x^2}{y^3\sqrt{z^9}}\right)$

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

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, $\angle P = 60^o$, $\angle Q = 90^o$, and $PR = 42$ Find the exact value of the measure of $\overline{QR}$.
    b) In ΔPQR, $\angle P = 30^o$, $\angle Q = 90^o$, and $PQ = 17$ Find the exact value of the measure of $\overline{PR}$.
    c) In ΔPQR, $\angle P = 45^o$, $\angle Q = 90^o$, 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 24º. 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 49º. How high is the kite flying?
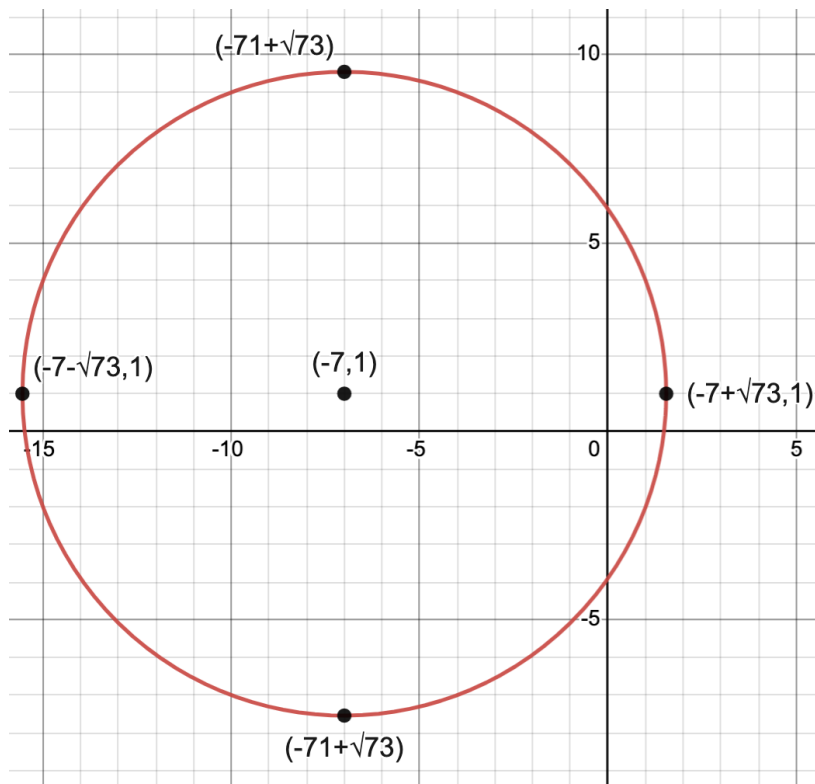
1) a) QII, 60°, $-\sqrt{3}$ b) QIV, 45°, $\sqrt{2}$ c) QIII, 30°, -2

2) $\dfrac{10a-7b}{2b+3a}$

3) $(x+7)^2 + (y-1)^2 = 73$ Center: (-7,1) Radius: $\sqrt{73}$

   Points: (-7+$\sqrt{73}$,1) (-7-$\sqrt{73}$,1) (-7,1+$\sqrt{73}$) (-7,1-$\sqrt{73}$)

4) $-\dfrac{1}{2}+1$ 5) (1, 0, -1)

6) $x = \dfrac{-3\pm\sqrt{309}}{10}$ 7) a) -2

7) b) $\dfrac{1}{4}$ 7) c) $\dfrac{7}{3}$

8) a) x = 1.851337   8) b) x = 4.489

9) $2Log(x) - 3Log(y) - \dfrac{9}{2}Log(z)$

10) a) BC = 8.285   b) $\sphericalangle A = 77.086^o$ c) $\sphericalangle B = 12.914^o$

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11) $\sin(\theta) = \frac{5}{12}, \cos(\theta) = -\frac{\sqrt{119}}{12}, \tan(\theta) = -\frac{5}{\sqrt{119}}, \sec(\theta) = -\frac{12}{\sqrt{119}}, \cot(\theta) = -\frac{\sqrt{119}}{5}$

12) a) -120°   b) 600°   c) Q3

13) a) $QR = 21\sqrt{3}$ b) $PQ = \frac{34}{\sqrt{3}}$ c) $QR = \frac{22}{\sqrt{2}}$

14) 203.9 feet   15) 40.8 feet

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