

Review Sheet for Test #3

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

- 1) Solve and check your answer: $\sqrt{2-x} + 2 = x$
- 2) Simplify the complex fraction:
$$\frac{\frac{7}{x} - \frac{4}{x-2}}{\frac{7}{x-2} - \frac{4}{x}}$$
- 3) Put the equation of the circle in standard form and identify the center and radius. Then graph the circle, labeling 4 points.
 $x^2 + y^2 + 14x - 2y = 31$
- 4) Divide and express in standard complex number form: $\frac{3+9i}{6-6i}$
 $x + 3y - 6z = 7$
- 5) Solve the system of equations: $2x - y + 2z = 0$
 $x + y + 2z = -1$
- 6) The population of Junkertown can be modeled by $P(t) = 17(1+.012)^t$, where $P(t)$ is in thousands and t is the number of years since 2070. Predict the population of Junkertown in 2086. Round to the nearest whole person.
- 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: $\log\left(\frac{x^2}{y^3\sqrt{z^9}}\right)$
- 10) Given right triangle ABC, C is a right angle, AB=8.5, and AC=1.9.
a) Find BC b) Find $m\angle A$ c) Find $m\angle B$.
- 11) If $\csc(\theta) = \frac{12}{5}$ and $\cos(\theta) < 0$, find the exact values of 5 remaining trigonometric ratios for θ in simplest form.
- 12) $\theta = 315^\circ$ a) Name an angle that is negative and coterminal to θ .
b) Name an angle that is positive and coterminal to θ .
c) What quadrant does θ lie?
- 13) a) In $\triangle PQR$, $\angle P = 60^\circ$, $\angle Q = 90^\circ$, and $PR = 42$ Find the exact value of the measure of QR.
b) In $\triangle PQR$, $\angle P = 30^\circ$, $\angle Q = 90^\circ$, and $PR = 17$ Find the exact value of the measure of PQ.
c) In $\triangle PQR$, $\angle P = 45^\circ$, $\angle Q = 90^\circ$, and $PR = 22$ Find the exact value of the measure of QR.
- 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?

Answers

1) a) $x = 2, x = 4$

2) $\frac{3x - 14}{3x + 8}$

3) $(x + 7)^2 + (y - 1)^2 = 81$, C: $(-7, 1)$, r: 9 Points: $(2, 1)$ $(-16, 1)$ $(-7, 10)$ $(-7, -8)$

4) $-1 - \frac{i}{2}$

5) $(1, 0, -1)$

6) 20,575

7) a) -2

7) b) $\frac{1}{4}$

7) c) $\frac{7}{3}$

8) a) $x = 1.851$

8) b) $x = 4.489$

9) $2\log(x) - 3\log(y) - \frac{9}{2}\log(z)$

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

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

12) a) -45°

b) 675°

c) Q4

13) a) $QR = 21\sqrt{3}$

b) $PQ = 17\sqrt{3}$

c) $QR = 11\sqrt{2}$

14) 203.9 feet

15) 40.8 feet