Math-3 Name_____

SM3 Unit 6 Test Preview HW

Period____

1) a) Write the vertex form equation. (Show all of your work.)
b) Find the zeroes of the equation.

$y = x^2 - 4x + 2$

2) $g(x) = \frac{5x}{x-4} + 3$

$g^{-1}(x) = ?$

3) Solve:

$5 = \frac{6v + 18}{v} + \frac{1}{v}$

Expand each logarithm.

4) $\log\left(b^3\sqrt{a}\right)$

Condense each expression to a single logarithm.

5) $\log_3 x - 2\log_3 y$

Solve. Round your answers to the nearest thousandth.

6) $4^{x-1} + 9.9 = 35$

7) $\log_3 x^2 + \log_3 4 = 4$

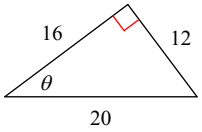
8) $\log_2 -3x = 5$

9) Find the time required for an investment of $100 to double if the money is placed in a simple interest account (compounded monthly) that earns 5.5% interest.

10) A certain radioactive material has a half-life of 2 years.
a) Find a base-e equation that models the decay of this radionucleide.
b) How long will it take for 8 grams to decay away to 1 gram?

Find the value of the trig function indicated. Do not give these values in decimal form. I want them in fraction form with simplified radicals (if applicable).

11) sec θ

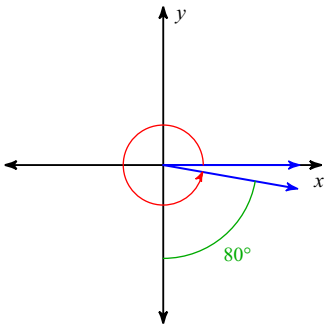


In each triangle ABC, angle C is a right angle, little side 'a' is opposite angle A, etc. Find the value of the trig function indicated (in simplified radical form if applicable).

12) Find csc A if $b = 6,\ c = 21,\ a = 9\sqrt{5}$

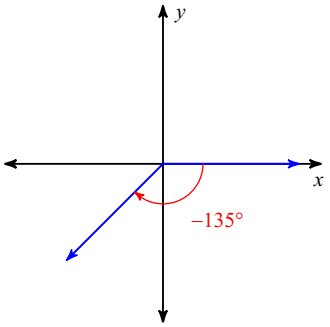
Find the measure of each:
a) Standard Position angle
b) Reference Angle
c) In which quadrant is the terminal side of the angle?

13)



Find the exact value of each trigonometric function.

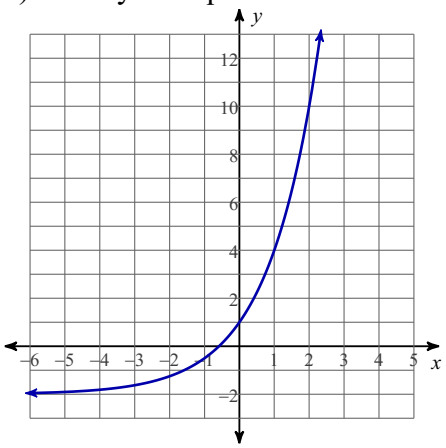
14) cos θ



15) a) Write the eqaution for the graph. The graph passes through the ordered pairs (0, 1) and (1, 4)

b) Solve for k: $2 = e^{k}$

c) Write your equation from 'a' as a base 'e' exponential equation.



16) a) Find the measure of the reference angle whose terminal side passes through the point (-8, 15)

b) Find the measure of the standard position angle

c) Find the cosine ratio for this angle.

Convert each degree measure into radians.

17) 75°

Convert each radian measure into degrees.

18) $\frac{5\pi}{6}$

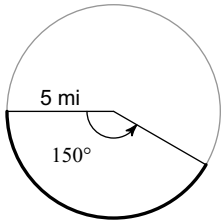
Find a positive and a negative coterminal angle for each given angle.

19) 225°

20) $-\frac{11\pi}{3}$

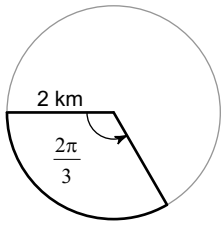
Find the length of each arc. Write your answer as a reduced fraction. Leave π in your answer.

21)



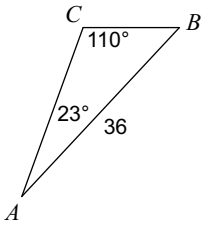
Find the area of each sector. Write your answer as a reduced fraction. Leave π in your answer.

22)

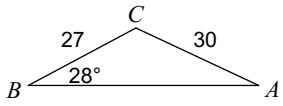


Find each measurement indicated. Round your answers to the nearest tenth.

23) Find BC

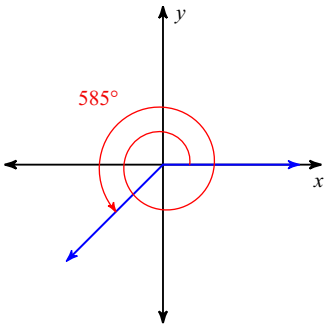


24) Find $m\angle A$



Find the exact value of each trigonometric function.

25) cos θ



State the number of possible triangles that can be formed using the given measurements.

26) $m\angle A = 127°$, $c = 9$ cm, $a = 17$ cm

27) $m\angle C = 18°$, $b = 32$ km, $c = 18$ km

28) $m\angle C = 57°$, $b = 24$ km, $c = 7$ km

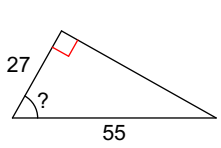
Find each measurement indicated. Round your answers to the nearest tenth. Hint: Draw the picture. If you have the ambiguous case, you must determine how many triangles are possble. For two triangles the angle will have two different measures.

29) $m\angle C = 36°$, $b = 21$ mi, $c = 20$ mi
Find $m\angle B$

30) $m\angle A = 47°$, $c = 15$ mi, $a = 7$ mi
Find $m\angle C$

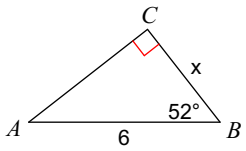
Find the measure of the indicated angle to the nearest degree.

31)



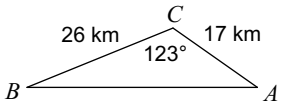
Find the measure of each side indicated. Round to the nearest tenth.

32)

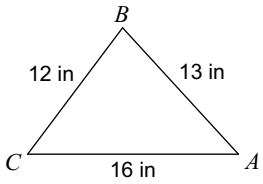


Find each measurement indicated. Round your answers to the nearest tenth.
$\boldsymbol{c^2 = a^2 + b^2 - 2abcosC}$

33) Find AB

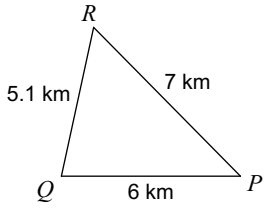


34) Find $m\angle C$

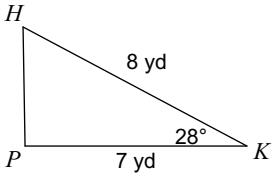


Find the area of each triangle to the nearest tenth.

35)



36)



37) Find the equation that predicts the height of a weight that is suspended from a spring given the following conditions: a) Initial displacement from equilibrium: 32 inches, (b) completes one cycle in 12 seconds, (c) disregard left/right shift, (d) use radians

$h(t) = a\sin bt$

38) Find the equation that predicts the height of a weight that is swinging on the end of pendulum: a) maximum height: 10 feet, minimum height 2 feet; (Hint: use the minimum and maximum height to find the centerline of oscillation then adjust the centerline using an up shift) (b) completes one cycle in 15 seconds, (c) disregard left/right shift, (d) use degrees

39) A Ferris wheel has a diameter of 200 feet. The bottom of the Ferris Wheel is 3 feet off the ground. Once all of the seats are loaded it takes 120 seconds to complete one revolution. (This is a period!). Write an equation that predicts the height of the bottom of a car as a function of time. Disregard any left/right shift of the sine function. Use radians to determine 'b'.
$h(t) = a\sin(b \cdot \theta) + k$

40) A Ferris wheel has a radius of 20 meters. The bottom of the Ferris Wheel is 1.5 meter off the ground. Once all of the chairs are loaded it takes 60 seconds to complete one revolution. (This is a period!). Write an equation that predicts the height of the bottom of a chair as a function of time. Disregard any left/right shift of the sine function. Use degrees to determine 'b'.
$h(t) = a\sin(b \cdot \theta) + k$