Name: _____ Date: _____ Period: _____

Trigonometry: *Chapter 1 Review*

***Show all work on a separate sheet of paper. In addition to this review sheet, review all notes, handouts, homework assignments, and the quiz to prepare for the Chapter 1 Test.***

1. Solve for the lengths of the right triangle if the legs are x and 4 and the hypotenuse is x+2.

2. An escalator in a department store is to carry people a vertical distance of 50 feet between floors. How long is the escalator if it makes an angle of $60^\circ$ with the ground?

3. If the distance between (-2,3) and (x, 1) is $\sqrt{13}$, solve for x.

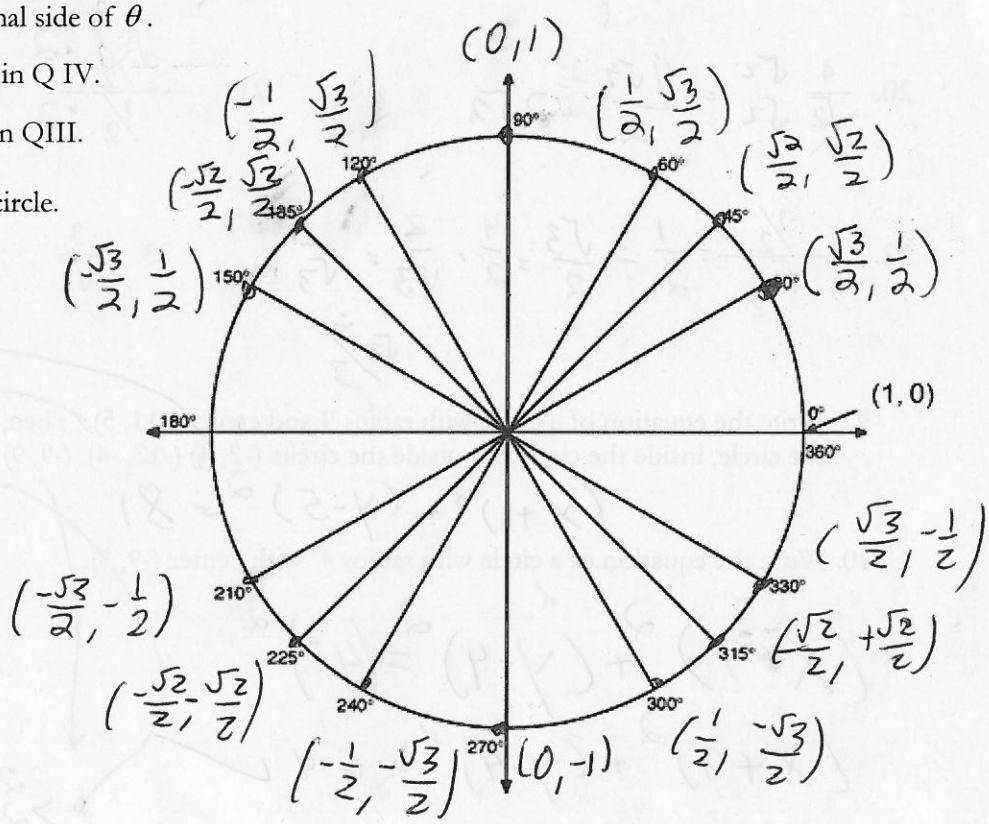
4. For each of the following angles:
   a. Draw the angle in standard position.
   b. Identify a point on the terminal side.
   c. Find the distance from the origin to the point.
   d. Find the six trig functions of the angle.

| | |
|---|---|
| $a.\ -120^\circ$ | $d.\ 60^\circ$ |
| $b.\ 270^\circ$ | $e.\ 315^\circ$ |
| $c.\ 150^\circ$ | $f.\ 180^\circ$ |

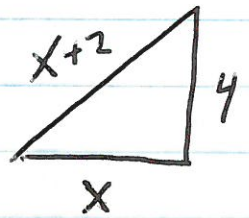
5. If which quadrant will $\theta$ lie if:
   a. $\sin\theta < 0$ and $\cos\theta > 0$`
   b. $\cot\theta$ and $\cos\theta$ have the same sign.
   c. $\cos\theta$ is positive and $\sin\theta$ is negative

6. Find all six trig functions for $\theta$, given the following information:
   a. (-6, 8) lies on the terminal side of $\theta$.
   b. $\tan\theta = -\frac{3}{4}$ and $\theta$ lies in Q IV.
   c. $\sec\theta = -3$ and $\theta$ lies in QIII.

7. Find all the points on the unit circle.



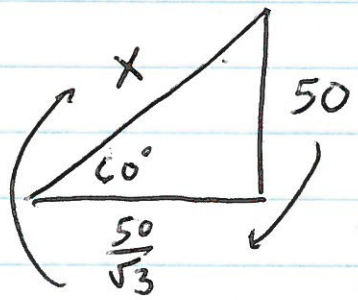
1)




$$x^2+4^2=(x+2)^2$$
$$x^2+16=x^2+4x+4$$
$$-x^2 \quad -16 \quad -x^2 \quad -16$$
$$0=4x-12$$
$$12=4x \rightarrow x=3$$

3, 4, 5

2)




$$x=\frac{100}{\sqrt{3}}=\frac{100\sqrt{3}}{3}$$

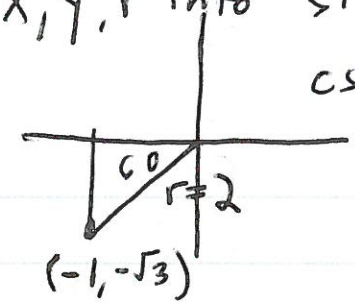
3) $(x--2)^2+(1-3)^2=(\sqrt{13})^2$

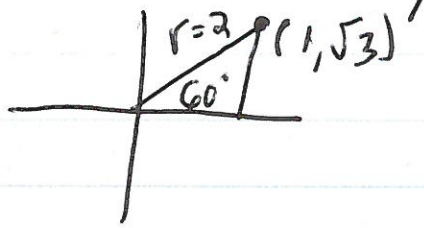
$$(x+2)^2+4=13$$
$$x^2+4x+4+4=13$$
$$-13 \quad -13$$
$$x^2+4x-5=0$$
$$(x+5)(x-1)=0$$
$$x=1 \text{ or } -5$$

Plug $x, y, r$ into $\sin\theta = \frac{y}{r}$, $\cos\theta = \frac{x}{r}$, $\tan\theta = \frac{y}{x}$

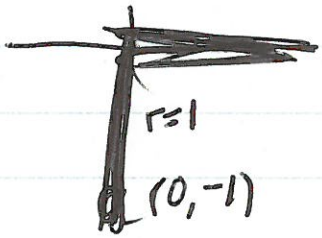
$\csc\theta = \frac{r}{y}$ $\sec\theta = \frac{r}{x}$ $\cot\theta = \frac{x}{y}$

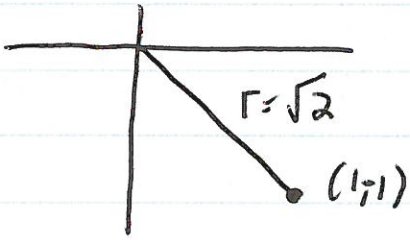
4 $-120°$



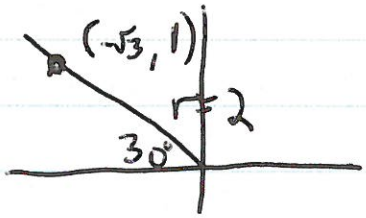



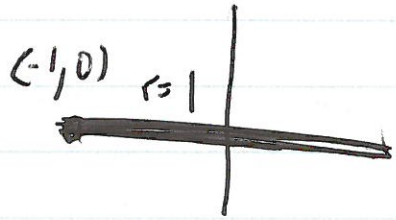

$270°$



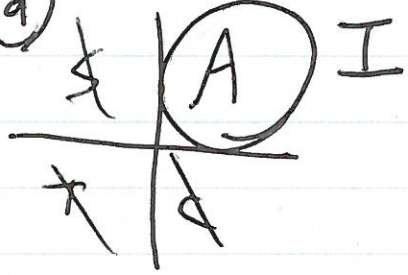




$150°$

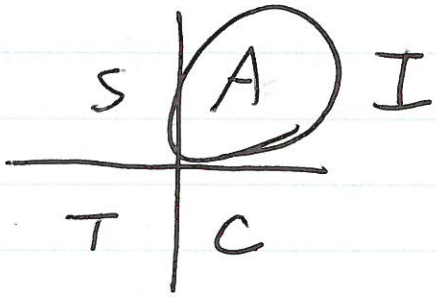


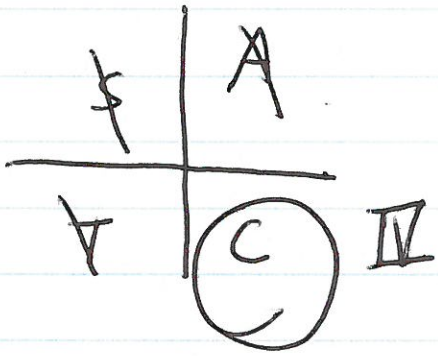

5 ~ (a)



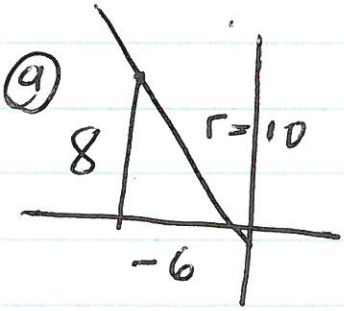

(b)




(c)




6) (a)

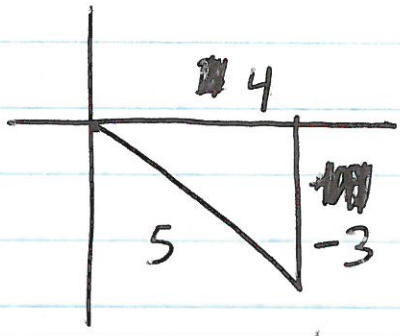



$\sin\theta = 8/10 = 4/5$ $\csc\theta = 5/4$

$\cos\theta = -3/5$ $\sec\theta = -5/3$

$\tan\theta = -4/3$ $\cot\theta = -3/4$

(b)

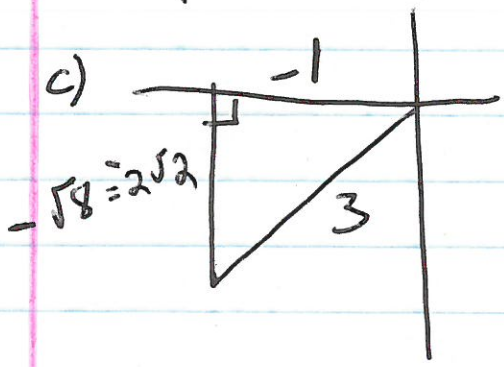



$\sin\theta = -3/5$ $\csc\theta = -5/3$

$\cos\theta = 4/5$ $\sec\theta = 5/4$

$\tan\theta = -3/4$ $\cot\theta = -4/3$

c)




$\sec\theta = -3 \rightarrow \cos\theta = -1/3 = \frac{x}{r}$

$\sin\theta = \frac{-2\sqrt{2}}{3}$ $\csc\theta = \frac{3}{-2\sqrt{2}} = \frac{3\sqrt{2}}{4}$

$\cos\theta = -1/3$ $\sec\theta = -3$

$\tan\theta = \frac{-1}{2\sqrt{2}} = \frac{-\sqrt{2}}{4}$ $\cot\theta = -2\sqrt{2}$

8. Simplify and/or perform the indicated operation.

1. $\sqrt{72}$ $\sqrt{36}\sqrt{2} = 6\sqrt{2}$

2. $2\sqrt{256}$ $2\sqrt{64}\cdot\sqrt{4} = 2\cdot 8\cdot 2 = 32$

3. $\sqrt{48}$ $\sqrt{16}\sqrt{3} = 4\sqrt{3}$

4. $\sqrt{720}$ $\sqrt{36}\sqrt{2}\sqrt{10} = 6\sqrt{20}$

5. $3\sqrt{125}$ $3\cdot\sqrt{25}\cdot\sqrt{5} = 15\sqrt{5}$

6. $\sqrt{828}$ $\sqrt{4}\sqrt{9}\sqrt{23} = 6\sqrt{23}$

7. $\sqrt{80}$ $\sqrt{16}\sqrt{5} = 4\sqrt{5}$

8. $\sqrt{240}$ $\sqrt{4}\sqrt{6}\sqrt{10} = 2\sqrt{60} = 2\sqrt{4}\sqrt{15}$ $4\sqrt{15}$

9. $\sqrt{900}$ $\sqrt{9}\cdot\sqrt{100} = 30$

10. $\sqrt{96}$ $\sqrt{16}\sqrt{6} = 4\sqrt{6}$

11. $(5\sqrt{2})^2$ $25\cdot 2 = 50$

12. $(4\sqrt{3})^2 = 16\cdot 3 = 48$

13. $(5\sqrt{2})(7\sqrt{3})$ $35\sqrt{6}$

14. $\left(\frac{\sqrt{3}}{3}\right)\left(\frac{\sqrt{6}}{2}\right) = \frac{\sqrt{18}}{6} = \frac{3\sqrt{3}}{6} = \frac{\sqrt{3}}{2}$

15. $(2\sqrt{3})(5\sqrt{7})$ $10\sqrt{21}$

18. $\frac{7}{\sqrt{7}}\cdot\frac{\sqrt{7}}{\sqrt{7}} = \frac{7\sqrt{7}}{7} = \sqrt{7}$

19. $\frac{\sqrt{5}}{\sqrt{10}} = \sqrt{\frac{5}{10}} = \sqrt{\frac{1}{2}} = \frac{\sqrt{1}}{\sqrt{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

20. $\frac{4}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{2}}{2} = 2\sqrt{2}$

21. $\frac{\sqrt{3}/2 \cdot 2}{1/2 \cdot 2} = \sqrt{3}$

22. $\frac{1/2}{\sqrt{3}/2} = \frac{1}{2} \div \frac{\sqrt{3}}{2} = \frac{1}{2}\cdot\frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}}$ $\sqrt{3}/3$

23. $\frac{3}{\sqrt{2}}\cdot\frac{2}{\sqrt{3}} = \frac{6\sqrt{6}}{\sqrt{6}\cdot\sqrt{6}} = \frac{6\sqrt{6}}{6} = \sqrt{6}$

9. Write the equation of a circle with radius 9 and center (-11, 5). Then, decide if the following points are on the circle, inside the circle or outside the circle: (-2, 4) (-12, -4), (-9, 9) (-4, -3).

$(x+11)^2 + (y-5)^2 = 81$

$(-2+11)^2 + (4-5)^2 ? 81$
$9^2 + 1 ? 81$
$82 > 81$
outside

$(-1)^2 + 0^2 < 81$ inside

$2^2 + 4^2 < 81$ inside

$2^2 + 8^2 > 81$ outside

10. Write the equation of a circle with radius $4^2$ with center (-9, 4).

$(x+9)^2 + (y-4)^2 = (4^2)^2$

$(x+9)^2 + (y-4)^2 = 64$