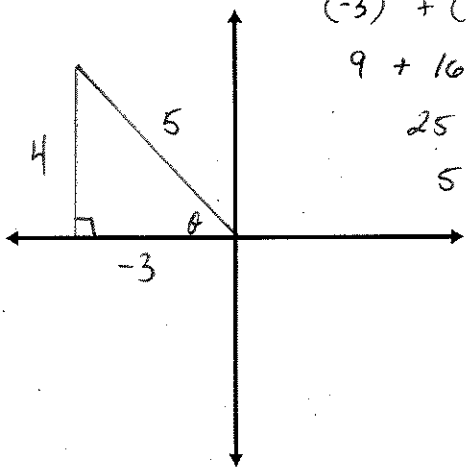
**Honors Algebra 2**
**x, y and r and ASTC**

**Name** KEY
**Date:** _____ **Period:** ____

**Find the 6 trig functions for each angle in standard position having the given point on its terminal side.**

**1.)** $(-3,4)$

$(-3)^2 + (4)^2 = r^2$
$9 + 16 = r^2$
$25 = r^2$
$5 = r$




$\sin\theta =$ $4/5$ $\quad \csc\theta =$ $5/4$

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

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

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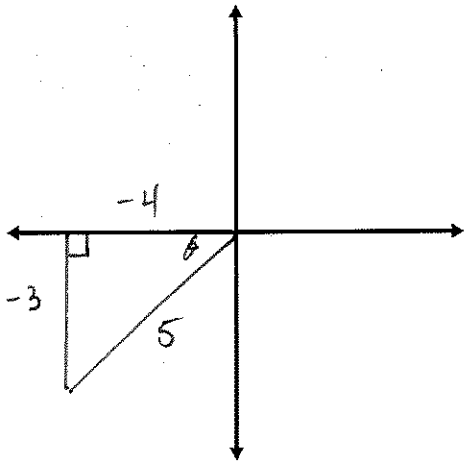
**2.)** $(-4,-3)$




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

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

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

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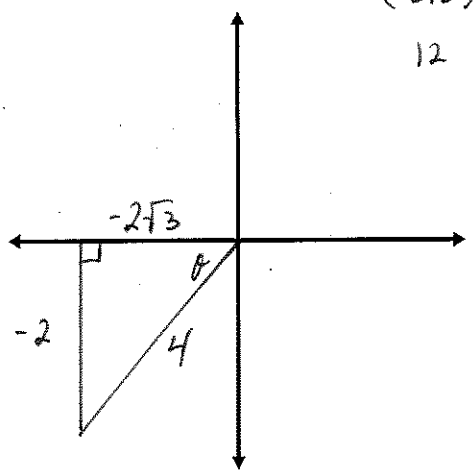
**3.)** $(-2\sqrt{3},-2)$

$(-2\sqrt{3})^2 + (-2)^2 = r^2$
$12 + 4 = r^2$
$16 = r^2$
$4 = r$




$\sin\theta =$ $\frac{-2}{4} = -\frac{1}{2}$ $\quad \csc\theta =$ $-2$

$\cos\theta =$ $\frac{-2\sqrt{3}}{4} = -\frac{\sqrt{3}}{2}$ $\quad \sec\theta =$ $\frac{-2\sqrt{3}}{3}$

$\tan\theta =$ $\frac{-2}{-2\sqrt{3}} = \frac{\sqrt{3}}{3}$ $\quad \cot\theta =$ $\frac{-2\sqrt{3}}{-2} = \sqrt{3}$

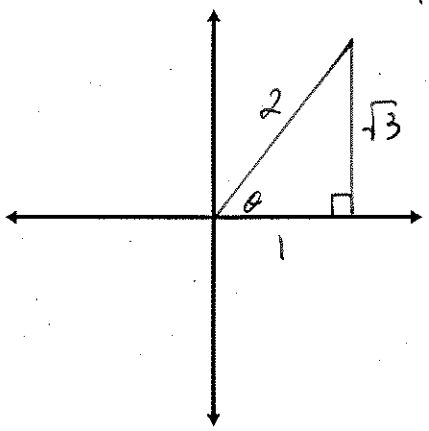
**4.)** $(1, \sqrt{3})$

$(1)^2 + (\sqrt{3})^2 = R^2$

$1 + 3 = R^2$

$4 = R^2$

$2 = R$




$\sin\theta = \frac{\sqrt{3}/2}{}$ $\quad \csc\theta = \frac{2\sqrt{3}/3}{}$

$\cos\theta = \frac{1/2}{}$ $\quad \sec\theta = \frac{2}{}$

$\tan\theta = \frac{\sqrt{3}}{}$ $\quad \cot\theta = \frac{\sqrt{3}/3}{}$

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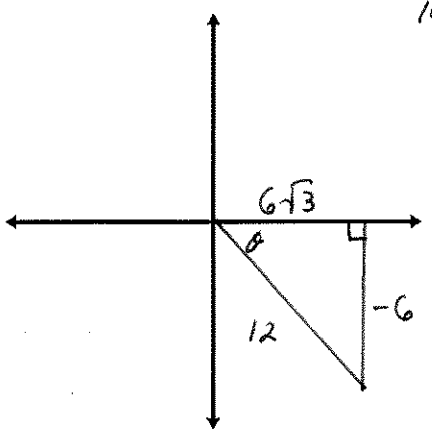
**5.)** $(6\sqrt{3}, -6)$

$(6\sqrt{3})^2 + (-6)^2 = R^2$

$108 + 36 = R^2$

$144 = R^2$

$12 = R$




$\sin\theta = \frac{-6}{12} = \frac{-1}{2}$ $\quad \csc\theta = \frac{-2}{}$

$\cos\theta = \frac{6\sqrt{3}}{12} = \frac{\sqrt{3}}{2}$ $\quad \sec\theta = \frac{2\sqrt{3}}{3}$

$\tan\theta = \frac{-6}{6\sqrt{3}} = -\frac{\sqrt{3}}{3}$ $\quad \cot\theta = \frac{-\sqrt{3}}{}$

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**6.)** $(0, -2)$

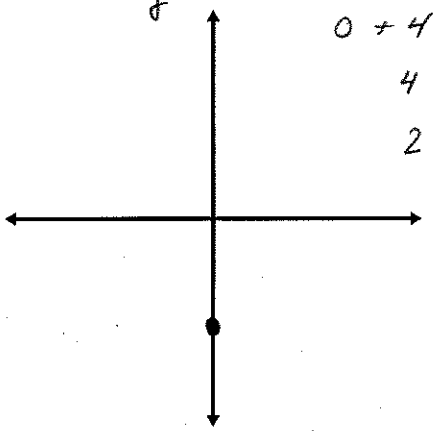
x y

$(0)^2 + (-2)^2 = R^2$

$0 + 4 = R^2$

$4 = R^2$

$2 = R$



$\sin\theta = \frac{-2/2 = -1}{}$ $\quad \csc\theta = \frac{-1}{}$

Y/R $\qquad$ R/y

$\cos\theta = \frac{0/2 = 0}{}$ $\quad \sec\theta = \frac{\text{UNDEFINED}}{}$

x/R $\qquad$ R/x

$\tan\theta = \frac{\text{UNDEFINED}}{}$ $\quad \cot\theta = \frac{0}{}$

Y/x $\qquad$ x/y

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**Suppose that the point (x, y) is in the indicated quadrant. Decide whether the given ratio is positive or negative.**

**7.)** III; $\frac{y}{r}$ SIN $\quad$ (−)

**8.)** IV; $\frac{x}{y}$ COT/TAN $\quad$ (−)

**9.)** II; $\frac{y}{r}$ SIN $\quad$ (+)

**10.)** III; $\frac{x}{r}$ COS $\quad$ (−)