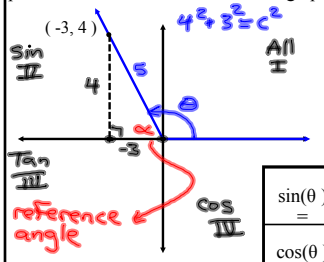
# Algebra II

## 12-3

## Trigonometric Functions of General Angles

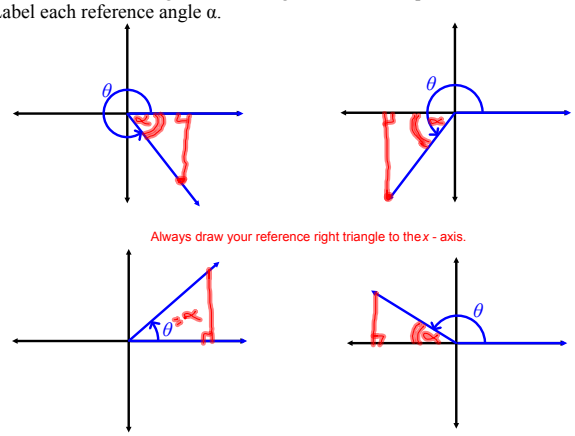
Find the values of the six trigonometric functions for the angle in standard position with the terminal side through point ( -3, 4 ).




All Sin Tan Cos
I II III IV

| | | | |
|---|---|---|---|
| sin(θ ) = | $\frac{4}{5}$ | csc(θ ) = | $\frac{5}{4}$ |
| cos(θ ) = | $-\frac{3}{5}$ | sec(θ ) = | $-\frac{5}{3}$ |
| tan(θ ) = | $-\frac{4}{3}$ | cot(θ ) = | $-\frac{3}{4}$ |

Draw the reference angle for each angle θ in standard position. Label each reference angle α.

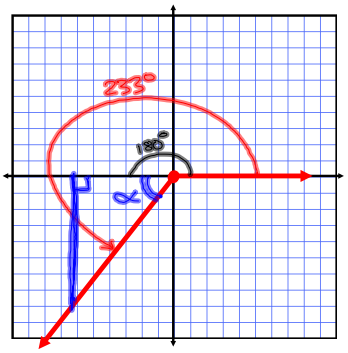



Always draw your reference right triangle to the x - axis.

Find the measure of the reference angle α of the given angle $\theta$.

9) $\theta = 233°$

$\alpha = 233° - 180°$
$= 53°$

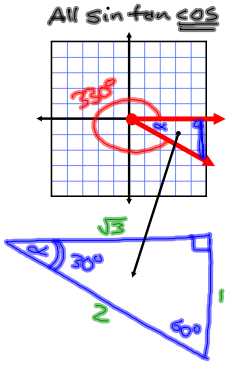



Find the exact value of the six trigonometric functions of each angle.

37) 330°

$\sin 330° = -\frac{1}{2}$
$\cos 330° = \frac{\sqrt{3}}{2}$
$\tan 330° = -\frac{1}{\sqrt{3}}$
$\csc 330° = -2$.
$\sec 330° = \frac{2}{\sqrt{3}}$
$\cot 330° = -\sqrt{3}$

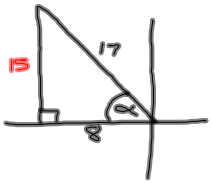
All Sin Tan Cos




First, give the quadrant of angle $\theta$. Then find the five other trigonometric function of $\theta$.

45) $\cos\theta = -\frac{8}{17}$, $0° < \theta < 180°$

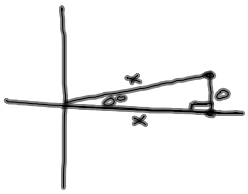
II or III
I or II
must be in II




| | | | |
|---|---|---|---|
| sin(θ ) = | $\frac{15}{17}$ | csc(θ ) = | $\frac{17}{15}$ |
| cos(θ ) = | $-\frac{8}{17}$ | sec(θ ) = | $-\frac{17}{8}$ |
| tan(θ ) = | $-\frac{15}{8}$ | cot(θ ) = | $-\frac{8}{15}$ |

Complete the table. If any value is undefined, so state.

5) $\theta = 0^\circ$

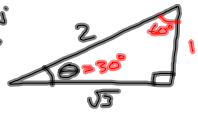



| | | | |
|---|---|---|---|
| sin(θ) = | $\frac{0}{x} = 0$ | csc(θ) = | $\emptyset$ |
| cos(θ) = | $\frac{x}{x} = 1$ | sec(θ) = | 1 |
| tan(θ) = | $\frac{0}{x} = 0$ | cot(θ) = | $\emptyset$ |

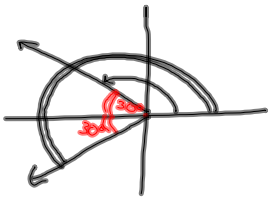
Name all angles $\theta$, $0^\circ \le \theta < 360^\circ$, that make the statement true.

61) $\cos\theta = -\frac{\sqrt{3}}{2}$ adj / hyp

II or III




$a^2+b^2=c^2$




150° or 210°

Assignment:

Pg. 566

1-4 all,
6-24 even,
38-52 even,
60-66 even