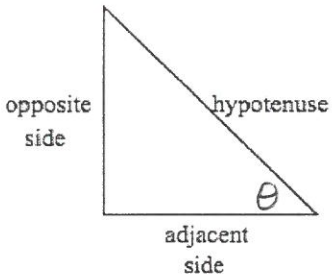
Section 2-4 Six Trigonometric Functions



SOH-CAH-TOA

Let θ be an acute angle of a right triangle. The six trigonometric functions are:

sine $= \frac{O}{H}$	cosine $= \frac{A}{H}$	tangent $= \frac{O}{A}$
cosecant $= \frac{H}{O}$	secant $= \frac{H}{A}$	cotangent $= \frac{A}{O}$
$\csc\theta = \frac{1}{\sin\theta}$	$\sec\theta = \frac{1}{\cos\theta}$	$\cot\theta = \frac{1}{\tan\theta}$

* what's true about sinθ & cosθ because both fractions have the 'H' in the denom.?

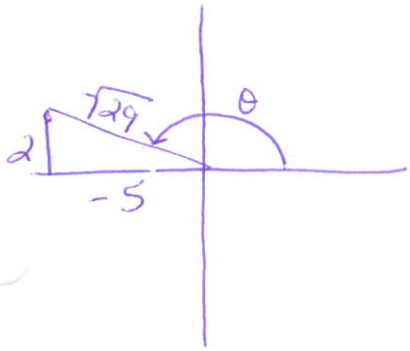
Find a decimal approximation on the calculator. Round to 4 decimal places.

1. tan 50° cot 50° $= \frac{1}{\tan 50^\circ}$ $= 0.8391$ 1.1918

2. csc 72° $= \frac{1}{\sin 72}$ $= 1.0515$

Find the exact values of the 6 trig functions of angle θ whose terminal side contains the given point.

3. (-5, 2)



$\sin\theta = \frac{2}{\sqrt{29}}$ $\csc\theta = \frac{\sqrt{29}}{2}$

$\cos\theta = \frac{-5}{\sqrt{29}}$ $\sec\theta = \frac{\sqrt{29}}{-5}$

$\tan\theta = \frac{2}{-5}$ $\cot\theta = \frac{-5}{2}$

DO NOT need to rationalize the denominator

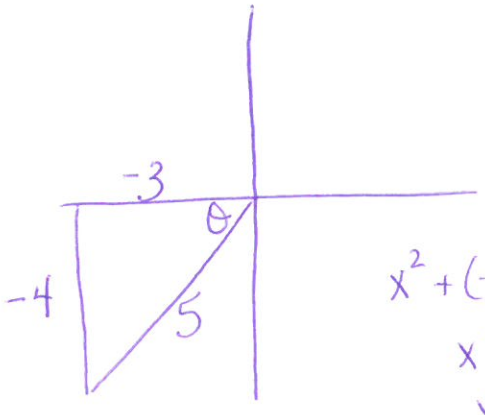
$(-5)^2 + (2)^2 = r^2$

$29 = r^2$ $r = \sqrt{29}$

*since θ is in 2nd quadrant, only sinθ & cscθ are pos.

If θ terminates in the given quadrant and has the given function value, find the exact values of the 6 trig functions.

4. Quadrant III, $\sin\theta = \frac{-4}{5} = \frac{O}{H}$



$x^2 + (-4)^2 = 5^2$

$x^2 = 9$

$x = \pm 3$ (because it's to the left, however it's going to be -3)

$\sin\theta = -\frac{4}{5}$ $\quad \csc\theta = -\frac{5}{4}$

$\cos\theta = -\frac{3}{5}$ $\quad \sec\theta = -\frac{5}{3}$

$\tan\theta = \frac{-4}{-3} = \frac{4}{3}$ $\quad \cot\theta = \frac{3}{4}$

* r is NEVER negative