

Angle	Quadrant (I, II, III, or IV)	Reference angle (in degrees)
$-240^\circ$	<del>IV</del> II	$60^\circ$
$310^\circ$	IV	$50^\circ$
$\frac{7\pi}{6}$	III	$30^\circ$
$\frac{9\pi}{4}$	I	$45^\circ$
$\frac{2\pi}{5}$	I	$72^\circ$

$$\frac{2\pi}{5} \cdot \frac{180^\circ}{\pi} = 72^\circ$$

1.  $\vec{v} - \vec{w} = \langle 5, -6 \rangle$
2.  $|\vec{v}| = \sqrt{29}$
3.  $|\vec{w}| = \sqrt{10}$
4.  $\vec{v} \cdot \vec{w} = 2(-3) + (-5)(1) = -11$
5.  $\theta = \cos^{-1}\left(\frac{-11}{\sqrt{29}\sqrt{10}}\right) = 130.2^\circ$
6.  $\left\langle \frac{2}{\sqrt{29}}, \frac{-5}{\sqrt{29}} \right\rangle$

$$\cos^{-1}\left(\frac{-11}{(\text{sqrt}(29)\text{sqrt}(10))}\right)$$

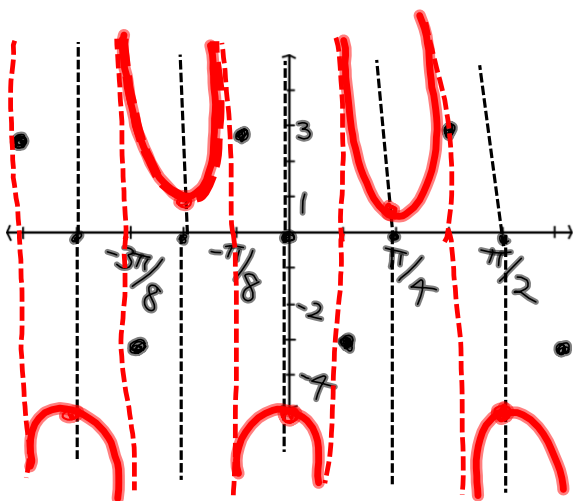
$\theta = 120^\circ, r = 6\text{cm}, s = ?\text{cm}$

$s = r\theta$

$= \cancel{6\text{cm}} \cdot \overset{4}{\cancel{120^\circ}} \cdot \frac{\pi}{\cancel{180^\circ} / 30} = 4\pi\text{cm}$

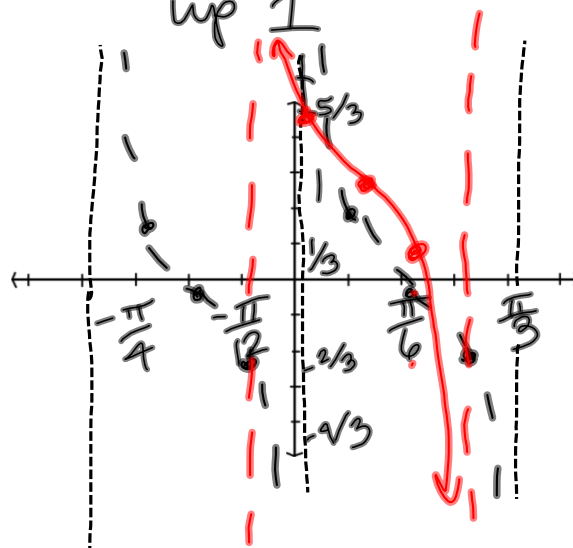
$f(x) = -3 \csc\left(4x + \frac{\pi}{2}\right) - 2$

- a. "amplitude" 3
- b. period  $\frac{2\pi}{4} = \frac{\pi}{2}$
- c. horizontal shift  $\frac{\pi/2}{4} = \frac{\pi}{8}$
- d. vertical shift   
 left   
 down 2

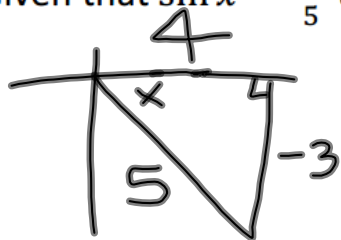


$f(x) = \frac{2}{3} \cot\left(3x - \frac{3\pi}{4}\right) + 1$

- e. "amplitude"  $\frac{2}{3}$
- f. period  $\frac{\pi}{3}$
- g. horizontal shift  $\frac{3\pi/4}{3} = \frac{\pi}{4}$
- h. vertical shift   
 right   
 up 1



Given that  $\sin x = \frac{-3}{5}$  and  $x$  is in quadrant IV, find  $\sin 2x$ ,  $\cos 2x$ , and  $\tan 2x$ .



$$\sin 2x = 2 \sin x \cos x$$

$$= 2 \left( \frac{-3}{5} \right) \left( \frac{4}{5} \right) = \boxed{\frac{-24}{25}}$$

$$\cos 2x = \cos^2 x - \sin^2 x$$

$$= \left( \frac{4}{5} \right)^2 - \left( \frac{-3}{5} \right)^2 = \frac{16}{25} - \frac{9}{25} = \boxed{\frac{7}{25}}$$

$$\tan 2x = \boxed{\frac{-24}{7}}$$

$2x \in \text{QIII}$