

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

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

$$1. \vec{v} - \vec{w} = \langle 5, -6 \rangle$$

$$2. |\vec{v}| = \sqrt{29}$$

$$3. |\vec{w}| = \sqrt{10}$$

$$4. \vec{v} \cdot \vec{w} = 2(-3) + (-5)(1) = \boxed{-11}$$

$$5. \theta = \cos^{-1}\left(\frac{-11}{\sqrt{29}\sqrt{10}}\right) = 130.2^\circ$$

$$6. \left\langle \frac{2}{\sqrt{29}}, \frac{-5}{\sqrt{29}} \right\rangle$$

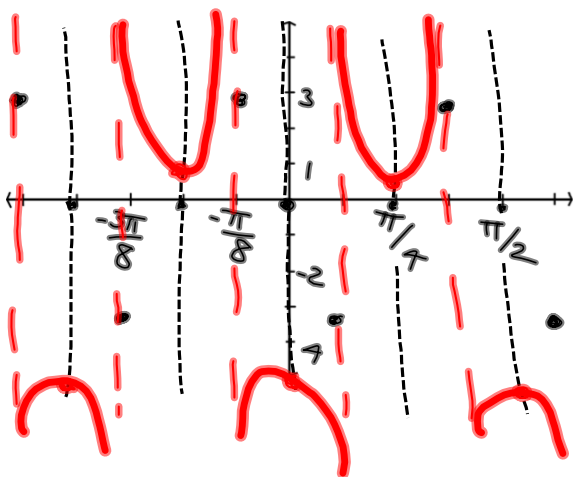
$\theta = 120^\circ, r = 6 \text{ cm}, s = ? \text{ cm}$

$s = r\theta = 6 \text{ cm} \cdot 120^\circ \cdot \frac{\pi}{180}$

$= 4\pi \text{ cm}$

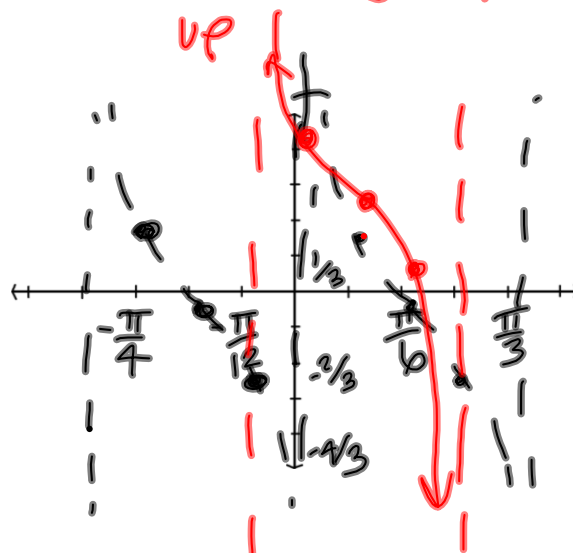
$f(x) = -3 \csc\left(4x + \frac{\pi}{2}\right) - 2$

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

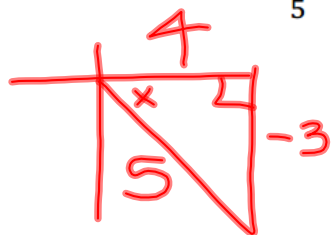


$f(x) = \frac{2}{3} \cot\left(3x - \frac{3\pi}{4}\right) + 1$

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



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



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

$2x \in$
~~QIV~~

$$\begin{aligned} \sin 2x &= 2 \sin x \cos x \\ &= 2 \left(\frac{-3}{5} \right) \left(\frac{4}{5} \right) = \boxed{\frac{-24}{25}} \end{aligned}$$

$$\begin{aligned} \cos 2x &= \cos^2 x - \sin^2 x \\ &= \left(\frac{4}{5} \right)^2 - \left(\frac{-3}{5} \right)^2 = \frac{16}{25} - \frac{9}{25} = \boxed{\frac{7}{25}} \end{aligned}$$