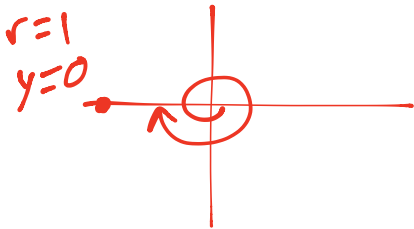


Graphs & Inverses of Trig Functions

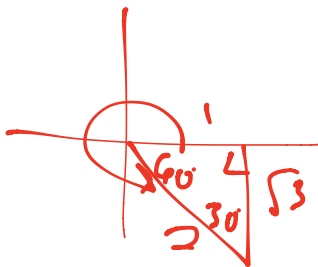
Unit 10 Review

Find each value by referring to the graphs of the trigonometric functions.

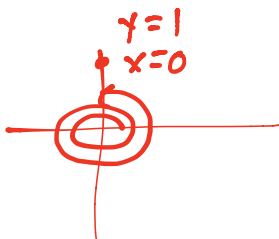
#1) $\csc(-540^\circ) = \text{und}$



#2) $\cos 300^\circ = \frac{1}{2}$



#3) $\tan 810^\circ = \text{und}$



State the domain and range for each function.

#4) $y = \csc \theta$

Domain = \mathbb{R} except $180^\circ K$ where K is an integer

Range = $(-\infty, -1] \cup [1, \infty)$

#5) $y = \cos \theta$

Domain = \mathbb{R}

Range = $[-1, 1]$

#6) $y = \cot \theta$

Domain = \mathbb{R} except $180^\circ K$ where K is an integer

Range = \mathbb{R}

Graphs & Inverses of Trig Functions

Unit 10 Review

State the amplitude, period, phase shift, and vertical displacement for each function.

#7) $y = 2 \sin \theta + 6$

Amplitude = $|2| = 2$

Period = 360°

Phase Shift = 0°

Vertical Displacement = 6

#8) $y = 10 \sin\left(\frac{1}{3}\theta - 300^\circ\right) - 8$

$y = 10 \sin\left[\frac{1}{3}(\theta - 900^\circ)\right] - 8$

Amplitude = $|10| = 10$

Period = 1080°

Phase Shift = 900°

Vertical Displacement = -8

#9) $y = \tan 2(\theta - 180^\circ) - 4$

Period = 90°

Phase Shift = 180°

Vertical Displacement = -4

Graphs & Inverses of Trig Functions

Unit 10 Review

Write an equation of the sine function with each amplitude, period, phase shift, and vertical displacement.

- #10) amplitude = 4, period = 4π , phase shift = $\frac{\pi}{2}$,
vertical displacement = 5

$$y = \pm 4 \sin\left[\frac{1}{2}\left(\theta - \frac{\pi}{2}\right)\right] + 5$$

- #11) amplitude = 7, period = 225° , phase shift = -90° , vertical displacement = -3

$$y = \pm 7 \sin\left[\frac{8}{5}(\theta + 90^\circ)\right] - 3$$

$$225^\circ k = 360^\circ$$

$$k = \frac{360}{225}$$

$$k = \frac{72}{45}$$

$$k = \frac{8}{5}$$

Write each equation in the form of an inverse relation.

- #12) $.23 = \sin \theta$

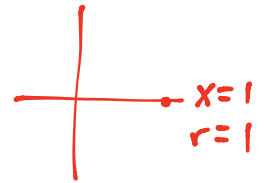
$$\theta = \sin^{-1}(0.23)$$

- #13) $\cos \beta = 1$

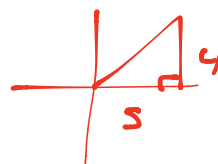
$$\beta = \cos^{-1}(1)$$

Evaluate each expression without using a calculator. Assume that all angles are in Quadrant I.

- #14) $\sec(\cos^{-1} 1) = 1$



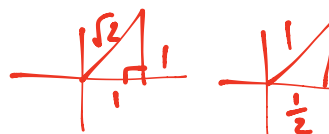
- #15) $\cot\left(\arctan \frac{4}{5}\right) = \frac{5}{4}$



- #16) $\sin(\tan^{-1} 1) + \cos(\cos^{-1} 0.5)$

$$= \frac{\sqrt{2}}{2} + \frac{1}{2}$$

$$= \frac{\sqrt{2} + 1}{2}$$



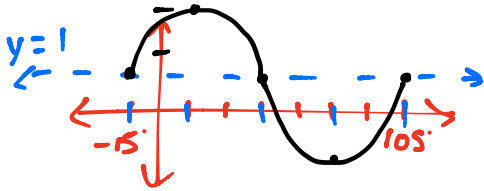
Graphs & Inverses of Trig Functions

Unit 10 Review

Graph each function.

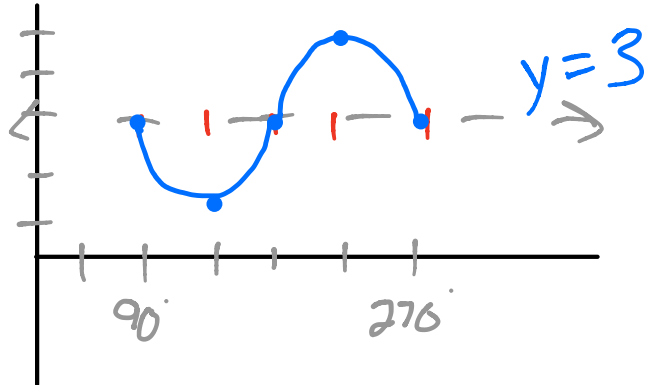
#17) $y = 2 \sin(3\theta + 45^\circ) + 1$

$$y = 2 \sin[3(x+15^\circ)] + 1$$



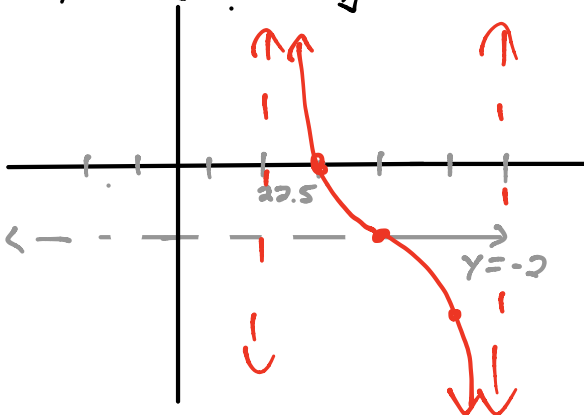
#19) $y = -2 \sin(2\theta - 180^\circ) + 3$

$$y = -2 \sin[2(x-90^\circ)] + 3$$



#18) $y = 2 \cot(4\theta - 90^\circ) - 2$

$$y = \cot[4(x-22.5)] - 2$$



#20) $y = -2 \cos\left(\frac{\theta}{2} - 45^\circ\right) + 1$

$$y = -2 \cos\left[\frac{1}{2}(x-90^\circ)\right] + 1$$

