

Graphs & Inverses of Trig Functions

6A – Graphing Secant & Cosecant

Write an equation of the **secant** function with the given information

- #1) $a = 2$, period = 480° ,
phase shift = 60° , VD = 1

$$y = 2 \sec\left[\frac{3}{4}(\theta - 60^\circ)\right] + 1$$

$$480k = 360$$

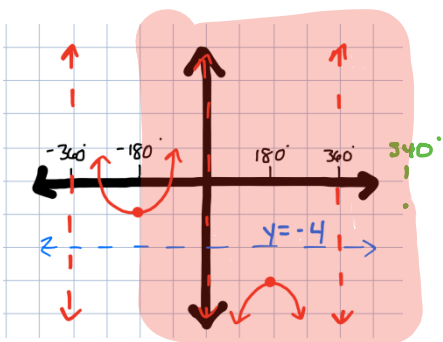
$$k = \frac{360}{480}$$

$$k = \frac{3}{4}$$

- #4) $a = -7$, period = $\frac{\pi}{4}$,
phase shift = $-\frac{\pi}{3}$, VD = -2

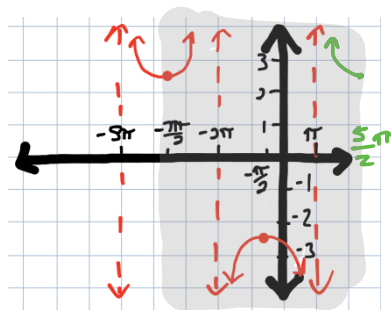
$$y = -7 \sec\left[8\left(\theta + \frac{\pi}{3}\right)\right] - 2$$

#2)



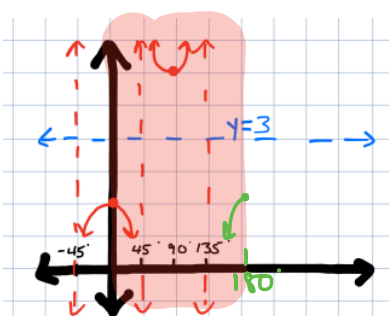
$$y = 2 \sec\left[\frac{1}{2}(\theta + 180^\circ)\right] - 4$$

#5)



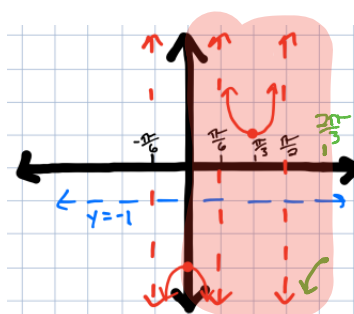
$$y = 2.5 \sec\left[\frac{1}{3}\left(\theta + \frac{7\pi}{3}\right)\right]$$

#3)



$$y = -1.5 \sec(2\theta) + 3$$

#6)



$$y = -2 \sec(3\theta) - 1$$

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6A – Graphing Secant & Cosecant

Write an equation of the cosecant function with the given information

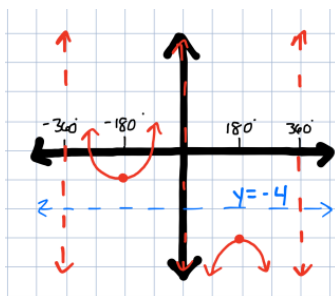
- #7) $a = -3$, period = 270° ,
phase shift = 120° , VD = 0

$$y = -3 \csc \left[\frac{4}{3} (\theta - 120^\circ) \right]$$

$$270^\circ K = 360^\circ$$

$$K = \frac{4}{3}$$

#8)

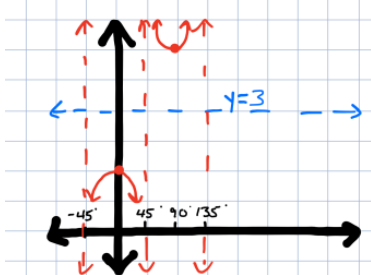


$$y = 2 \csc \left[\frac{1}{2} (\theta + 360^\circ) \right] - 4$$

$$720^\circ K = 360^\circ$$

$$K = \frac{1}{2}$$

#9)



$$y = -1.5 \csc \left[2 (\theta + 45^\circ) \right] + 3$$

$$180^\circ K = 360^\circ$$

$$K = 2$$

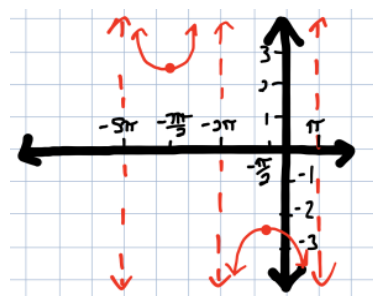
- #10) $a = \frac{1}{3}$, period = π ,
phase shift = $\frac{\pi}{5}$, VD = 7

$$y = \frac{1}{3} \csc \left[2 \left(\theta - \frac{\pi}{5} \right) \right] + 7$$

$$2\pi K = 2\pi$$

$$K = 1$$

#11)

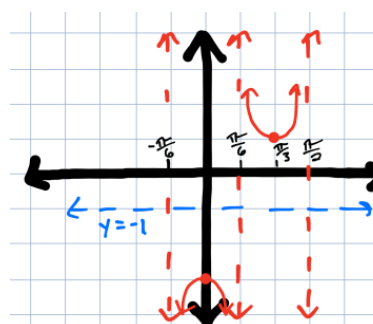


$$y = 2.5 \csc \left[\frac{1}{3} (\theta + 5\pi) \right]$$

$$6\pi K = 2\pi$$

$$K = \frac{1}{3}$$

#12)



$$y = -2 \csc \left[3 \left(\theta + \frac{\pi}{6} \right) \right] - 1$$

$$\frac{4\pi}{6} K = 2\pi$$

$$K = 2\pi \cdot \frac{6}{4\pi}$$

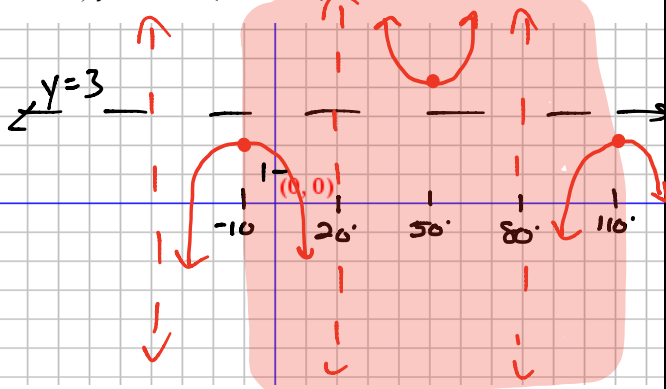
$$K = 3$$

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Graph a minimum of one period for each function.

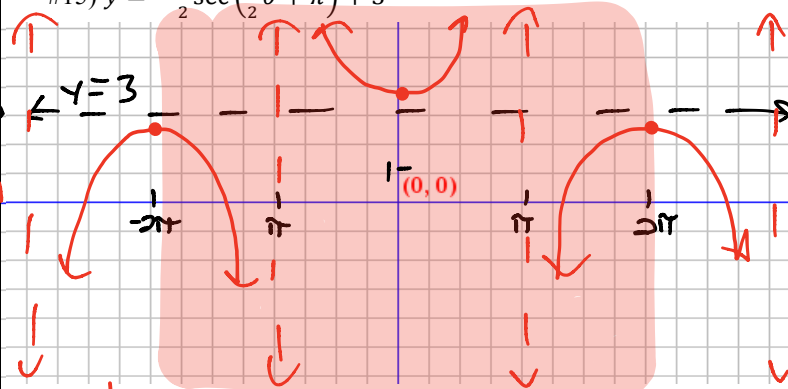
$y = -\sec[3(\theta + 10^\circ)] + 3$
 #13) $y = -\sec(3\theta + 30^\circ) + 3$



- A: -1
- ~~Amplitude:~~
- Reflected over midline? **Yes**
- Vertical Displacement: **3**
- Midline: **$y=3$**
- Phase Shift: **-10°**
- Period: **$120^\circ = \frac{360^\circ}{3}$**

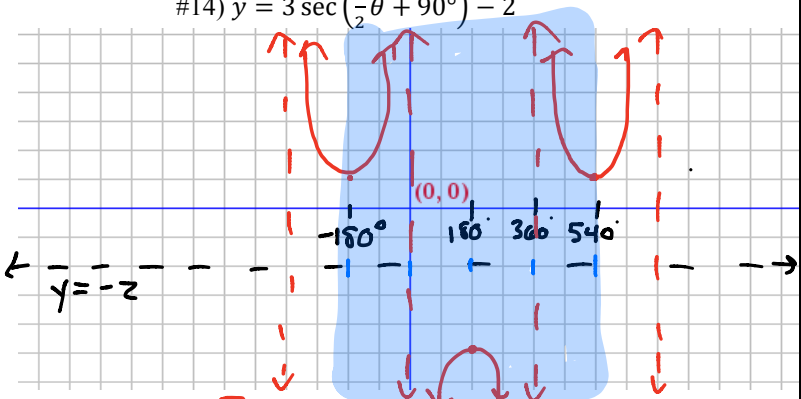
$y = -\frac{1}{2}\sec[\frac{1}{2}(\theta + 2\pi)] + 3$

#15) $y = -\frac{1}{2}\sec(\frac{1}{2}\theta + \pi) + 3$



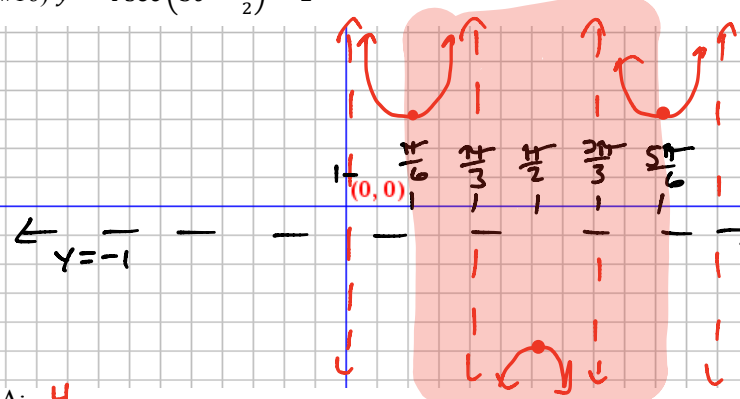
- A: $-\frac{1}{2}$
- ~~Amplitude:~~
- Reflected over midline? **Yes**
- Vertical Displacement: **3**
- Midline: **$y=3$**
- Phase Shift: **-2π**
- Period: **$4\pi = \frac{2\pi}{1/2}$**

$y = 3\sec[\frac{1}{2}(\theta + 180^\circ)] - 2$
 #14) $y = 3\sec(\frac{1}{2}\theta + 90^\circ) - 2$



- A: **3**
- ~~Amplitude:~~
- Reflected over midline? **No**
- Vertical Displacement: **-2**
- Midline: **$y=-2$**
- Phase Shift: **-180°**
- Period: **$720^\circ = \frac{360^\circ}{1/2}$**

$y = 4\sec[3(\theta - \frac{\pi}{6})] - 1$
 #16) $y = 4\sec(3\theta - \frac{\pi}{2}) - 1$

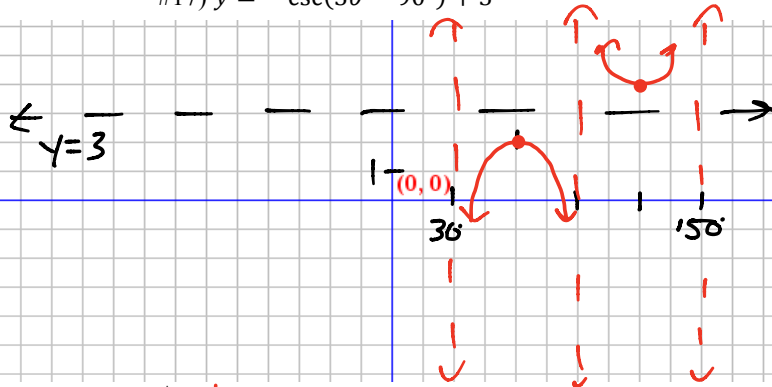


- A: **4**
- ~~Amplitude:~~
- Reflected over midline? **No**
- Vertical Displacement: **-1**
- Midline: **$y=-1$**
- Phase Shift: **$\frac{\pi}{6}$**
- Period: **$\frac{2\pi}{3}$**

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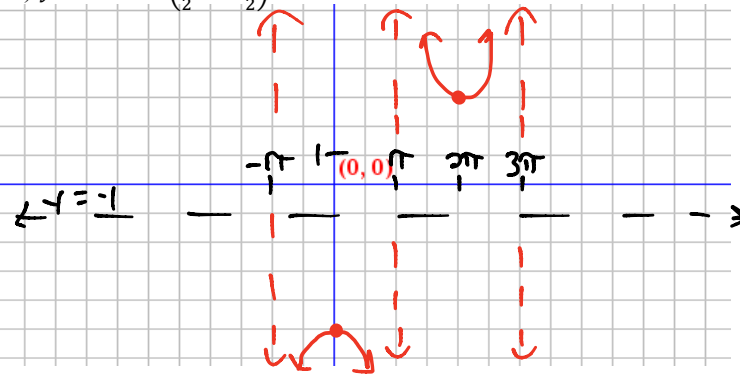
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#17) $y = -\csc(3\theta - 90^\circ) + 3$



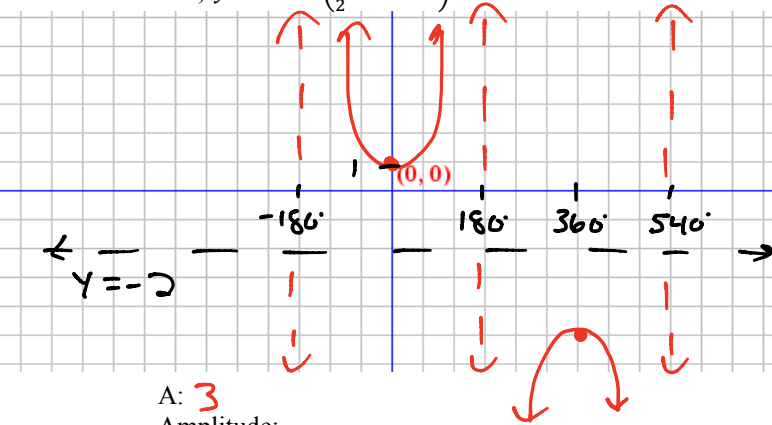
A: ~~-1~~
 Amplitude: ~~1~~
 Reflected over midline? **Yes**
 Vertical Displacement: **3**
 Midline: **y = 3**
 Phase Shift: **30°**
 Period: **120° = $\frac{360^\circ}{3}$**

#19) $y = -4 \csc\left(\frac{1}{2}\theta + \frac{\pi}{2}\right) - 1$



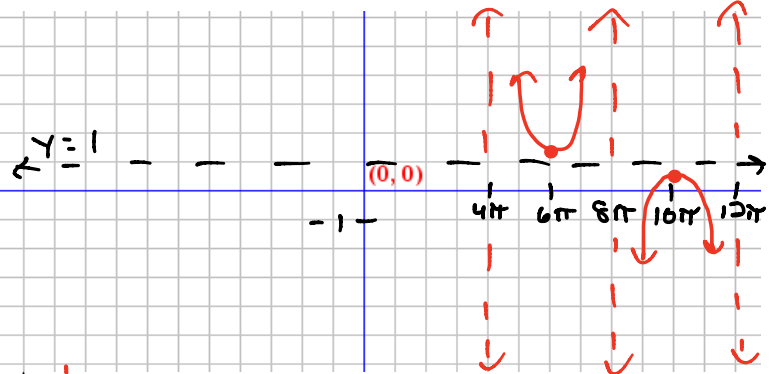
A: ~~-4~~
 Amplitude: ~~4~~
 Reflected over midline? **Yes**
 Vertical Displacement: **-1**
 Midline: **y = -1**
 Phase Shift: **-π**
 Period: **4π = $\frac{2\pi}{1/2}$**

#18) $y = 3 \csc\left(\frac{1}{2}\theta + 90^\circ\right) - 2$



A: **3**
 Amplitude: ~~3~~
 Reflected over midline? **NO**
 Vertical Displacement: **-2**
 Midline: **y = -2**
 Phase Shift: **-180°**
 Period: **720° = $\frac{360^\circ}{1/2}$**

#20) $y = \frac{1}{3} \csc\left(\frac{1}{4}\theta - \pi\right) + 1$



A: **1/3**
 Amplitude: ~~1/3~~
 Reflected over midline? **NO**
 Vertical Displacement: **1**
 Midline: **y = 1**
 Phase Shift: **4π**
 Period: **8π = $\frac{2\pi}{1/4}$**