

Chapter 4 Part II Practice Graphing

$$y = A(\text{trig})(B\theta - c) + D$$

Name Key Period _____

Determine the amplitude, phase shift, period, and vertical shift and then graph one period of the function. Label the x and y axis for each graph.

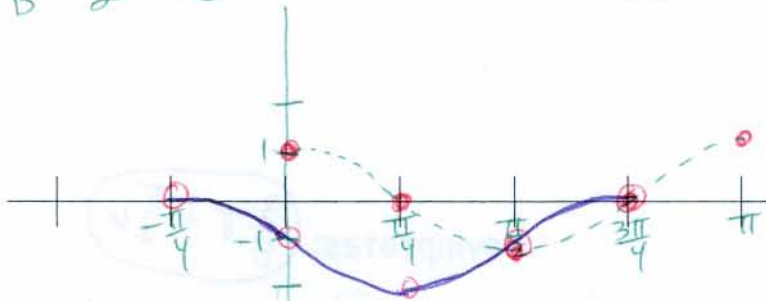
1. $y = \cos\left(2\theta + \frac{\pi}{2}\right) - 1$

A: $|A| = |1| = 1$

PS: $\frac{C}{B} = \frac{-\frac{\pi}{2}}{2} = -\frac{\pi}{2} \cdot \frac{1}{2} = -\frac{\pi}{4}$

P: $\frac{2\pi}{B} = \frac{2\pi}{2} = \pi$

VS: $D = -1$



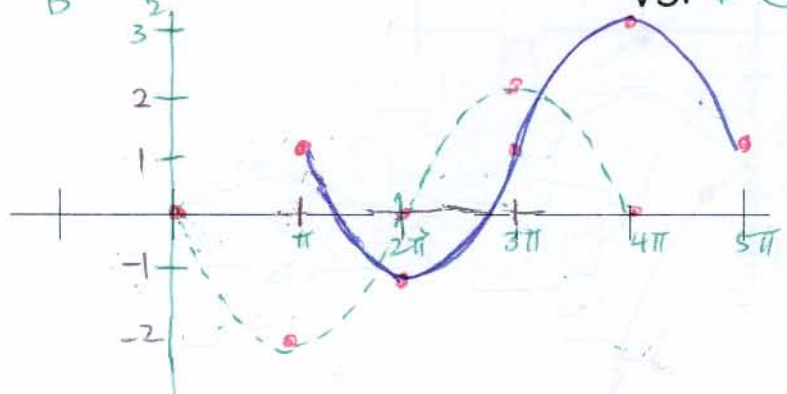
2. $y = -2\sin\left(\frac{1}{2}\theta - \frac{\pi}{2}\right) + 1$

A: $|A| = |-2| = 2$

PS: $\frac{C}{B} = \frac{\frac{\pi}{2}}{\frac{1}{2}} = \pi$

P: $\frac{2\pi}{B} = \frac{2\pi}{\frac{1}{2}} = 4\pi$

VS: $D = 1$



$$3. y = \tan\left(2\theta - \frac{\pi}{4}\right) + 1$$

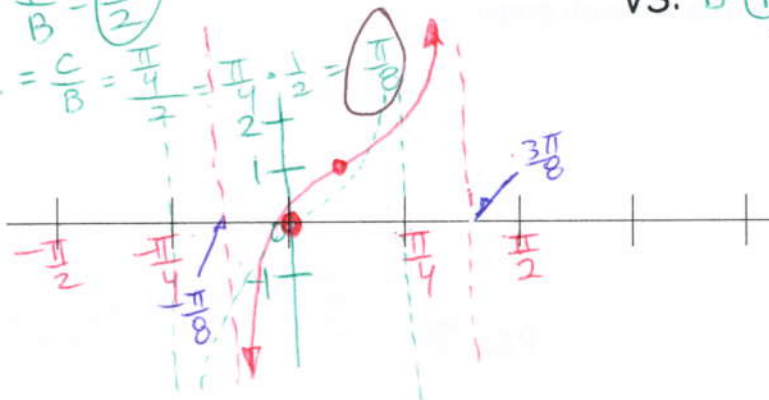
$$A: |A| = |1| = 1$$

$$P: \frac{\pi}{B} = \frac{\pi}{2}$$

$$P.S. = \frac{C}{B} = \frac{\pi/4}{2} = \frac{\pi}{8}$$

$$\text{Asymptotes: } \frac{3}{8}\pi + \frac{\pi}{2}n$$

$$\text{VS: } D = 1$$



$$4. y = \cot\left(2\theta + \frac{\pi}{4}\right) - 3$$

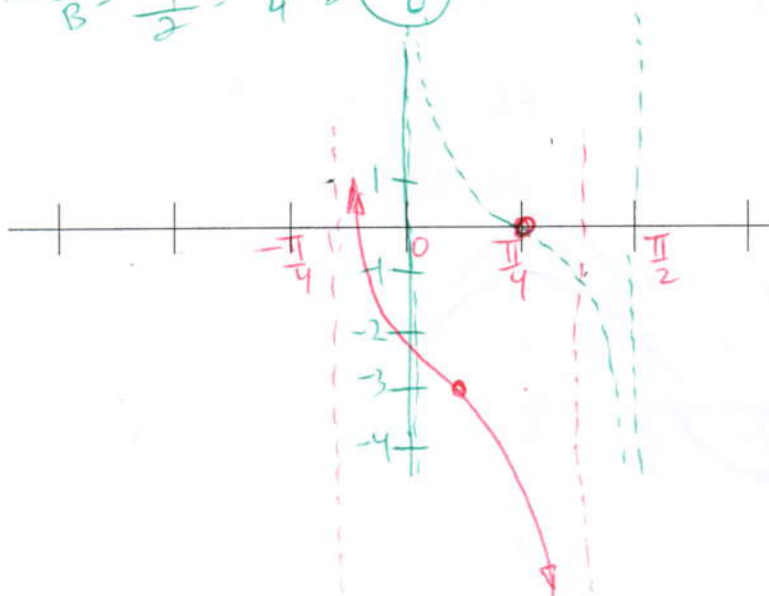
$$A: |A| = |1| = 1$$

$$P: \frac{\pi}{B} = \frac{\pi}{2}$$

$$P.S. = \frac{C}{B} = \frac{-\pi/4}{2} = -\frac{\pi}{8}$$

$$\text{Asymptotes: } \frac{3}{8}\pi + \frac{\pi}{2}n$$

$$\text{VS: } D = -3$$



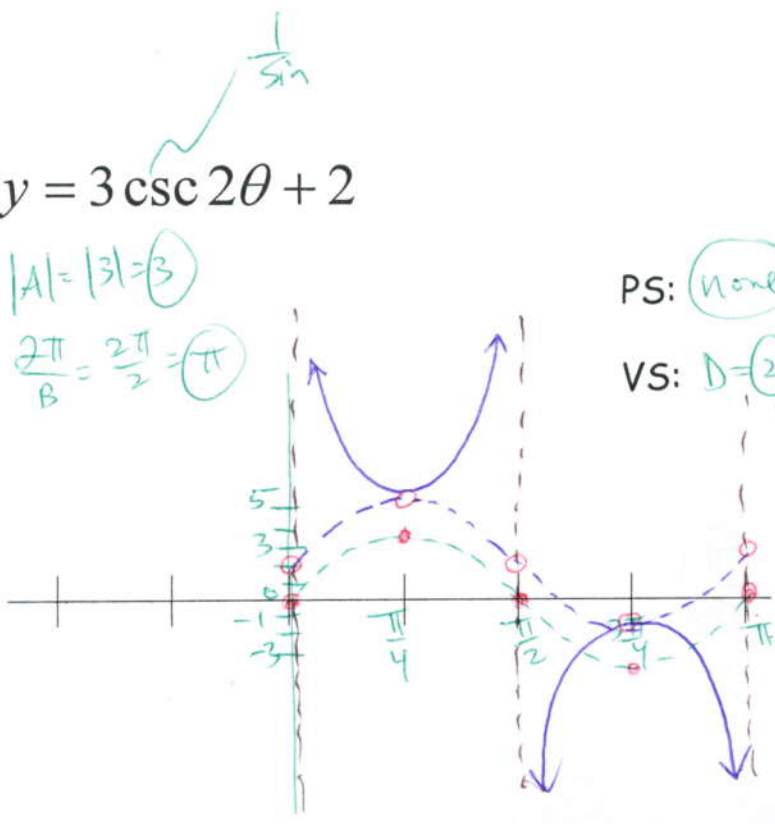
5. $y = 3 \csc 2\theta + 2$

A: $|A| = |3| = 3$

P: $\frac{2\pi}{B} = \frac{2\pi}{2} = \pi$

PS: None

VS: $D = 2$



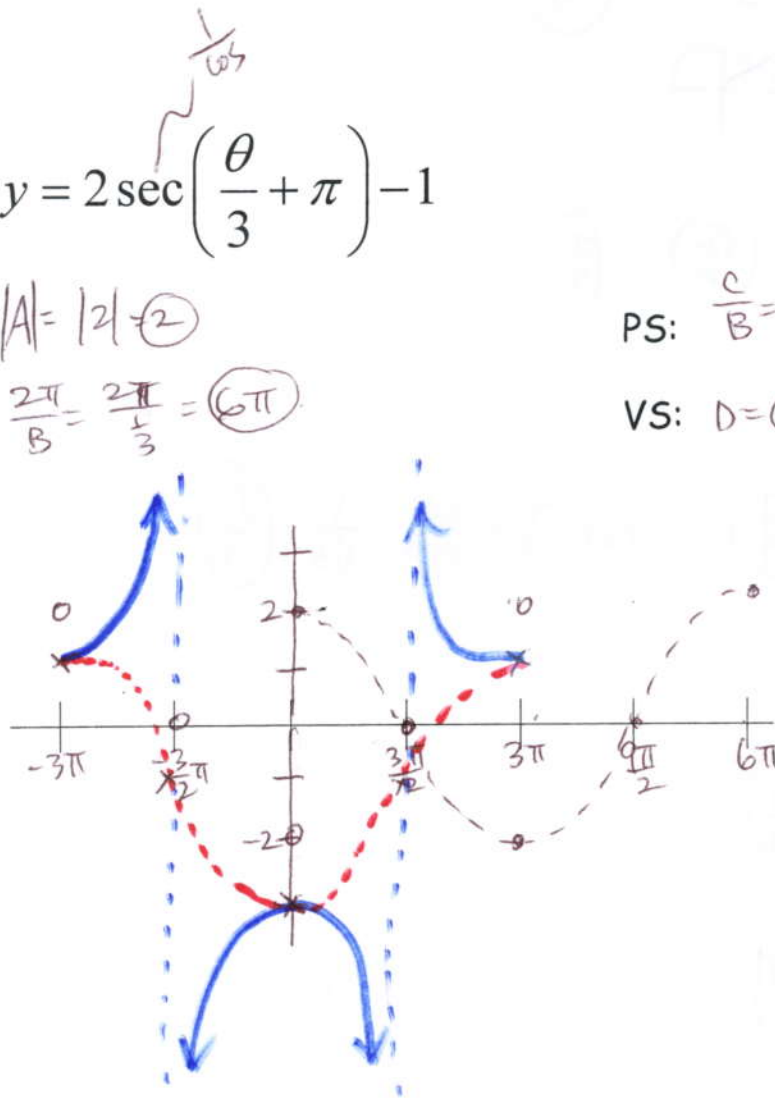
6. $y = 2 \sec\left(\frac{\theta}{3} + \pi\right) - 1$

A: $|A| = |2| = 2$

P: $\frac{2\pi}{B} = \frac{2\pi}{\frac{1}{3}} = 6\pi$

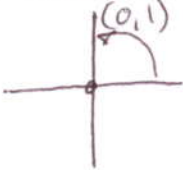
PS: $\frac{C}{B} = \frac{-\pi}{\frac{1}{3}} = -3\pi$

VS: $D = -1$



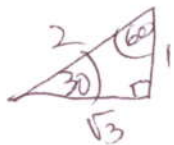
Find the exact value:

7. $\text{Arccos}(0) = \frac{\pi}{2}$



QI, QII

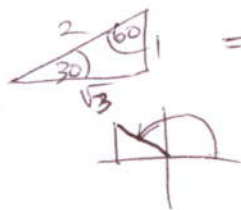
8. $\text{Sin}^{-1} \frac{\sqrt{3}}{2}$



$\frac{\pi}{3}$

QI, QIV

9. $\cos(\text{Cos}^{-1}(-\frac{\sqrt{3}}{2}))$



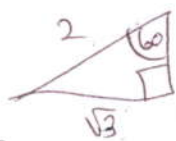
$-\frac{\sqrt{3}}{2}$

QI, QII

10. $\text{Cos}^{-1}(\cos \frac{\pi}{4}) = \text{Cos}^{-1}(\frac{\sqrt{2}}{2}) = \frac{\pi}{4}$

QI, QII

11. $\cot(\text{sin}^{-1} \frac{\sqrt{3}}{2}) = \cot \frac{\pi}{3} = \frac{\text{adj}}{\text{opp}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

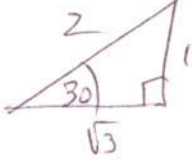


QI, QIV

12. $\text{Sin}^{-1}(-\frac{\sqrt{2}}{2}) = -\frac{\pi}{4}$

QIII, QIV



13. $\tan\left(\sin^{-1}\left(\frac{1}{2}\right)\right) =$  $\tan \frac{\pi}{6} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

QI, QIV

14. Write an equation of the cosine function with amplitude 3 and period $4\pi = \frac{2\pi}{B}$

$$y = A \cos(B\theta - C) + D$$

$$y = \pm 3 \cos \frac{1}{2}\theta$$

$$\frac{4\pi}{1} = \frac{2\pi}{B}$$

$$4\pi B = 2\pi$$

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

15. Write an equation of the sine function with the given amplitude, period,

phase shift, and vertical shift: amplitude = 3, period = $\frac{2\pi}{3}$, phase shift = $\frac{2\pi}{3} = \frac{2\pi}{B}$

$$-\frac{1}{6}\pi, \text{ vertical shift} = 4.$$

$$y = A \sin(B\theta - C) + D$$

$$y = \pm 3 \sin\left(3\theta - -\frac{\pi}{2}\right) + 4$$

$$y = \pm 3 \sin\left(3\theta + \frac{\pi}{2}\right) + 4$$

$$B = 3$$

$$P.S. = -\frac{\pi}{6} = \frac{C}{B}$$

$$-\pi B = 6C$$

$$-3\pi = 6C$$

$$-\frac{1}{2}\pi = C$$

16. Write an equation for secant function given amplitude = 6, period = $\frac{3\pi}{4}$, phase shift = 2π , vertical shift = -3.

$$y = A \sec(B\theta - C) + D$$

$$y = \pm 6 \sec\left(\frac{8}{3}\theta - \frac{16\pi}{3}\right) - 3$$

$$\frac{3\pi}{4} = \frac{2\pi}{B}$$

$$3\pi B = 8\pi$$

$$B = \frac{8}{3}$$

$$2\pi = \frac{C}{B}$$

$$2\pi = \frac{C}{\frac{8}{3}}$$

$$2\pi \cdot \frac{8}{3} = C$$

$$\frac{16\pi}{3} = C$$