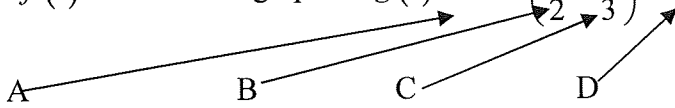


1. Describe the transformations that change the graph of

$$f(t) = \cos t \text{ to the graph of } g(t) = 2 \cos\left(\frac{t}{2} + \frac{\pi}{3}\right) + 3.$$



1. A. \_\_\_\_\_  
 B. \_\_\_\_\_  
 C. \_\_\_\_\_  
 D. \_\_\_\_\_

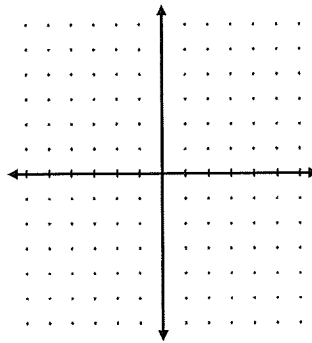
2. Write an equation for the sine function that is compressed vertically by a factor of  $\frac{1}{2}$ , has a period of  $\frac{\pi}{3}$ , is reflected over the x-axis and a phase shift of  $\frac{\pi}{6}$  to the left.

2. \_\_\_\_\_

3. The function  $g(t) = \tan t$  is an \_\_\_\_\_ (choose EVEN or ODD) function.

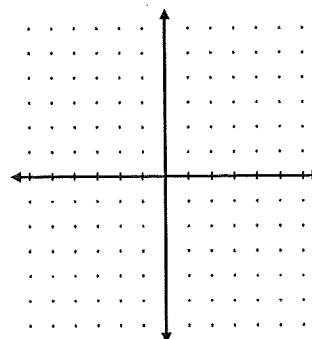
3. \_\_\_\_\_  
 EVEN or ODD

4. What is the y-intercept of the graph  $g(t) = 3 \cos t - 4$ ?  
*You don't need to graph this one!*



4. \_\_\_\_\_  
 Write as an ordered pair

5. Name (a) the domain and (b) the range of  $f(t) = -2 \sin t + 3$ .  
*You don't need to graph this one!*



5. \_\_\_\_\_  
 domain in interval notation

\_\_\_\_\_ range in interval notation

6. Given  $f(t) = -\sin t$ , what interval is the function increasing from  $[-2\pi, 2\pi]$ .

Hint...graph it.

6. \_\_\_\_\_  
Answer in interval notation

For #7-9, find **all** values for which the given statement is true.

7.  $\cos t = -\frac{\sqrt{2}}{2}$

8.  $\sin t = 0$

9.  $\tan t = -\sqrt{3}$

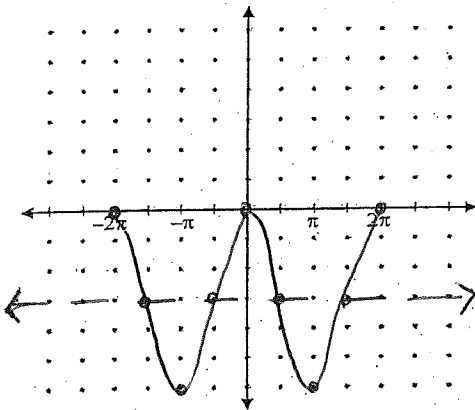
7. \_\_\_\_\_  
\_\_\_\_\_

8. \_\_\_\_\_  
\_\_\_\_\_

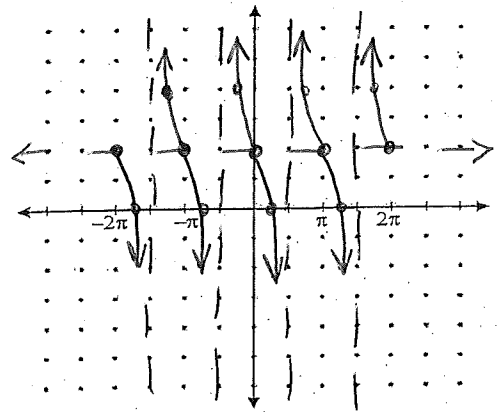
9. \_\_\_\_\_  
\_\_\_\_\_

For questions 10-11, write the equation of the functions graphed. These do not have a phase shift.

10.  $f(t) =$  \_\_\_\_\_

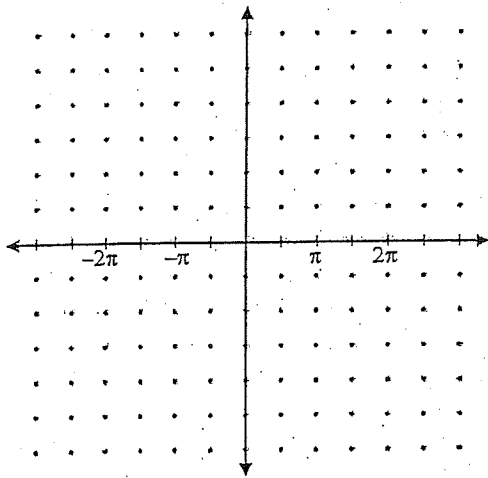


11.  $f(t) =$  \_\_\_\_\_

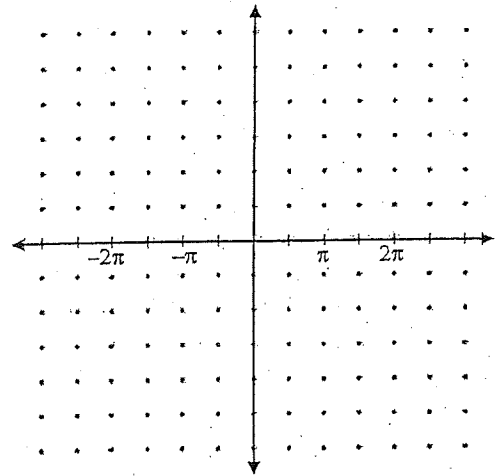


For questions 12-18, graph the function neatly.

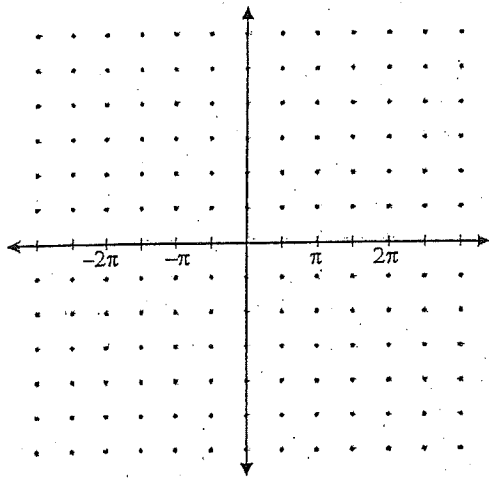
12. Graph  $f(t) = -4|\cos t|$  from  $-2\pi \leq t \leq 2\pi$ .



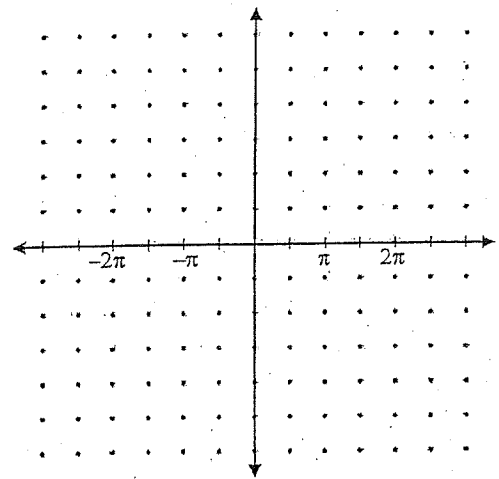
13. Graph  $f(t) = -3\sin t - 1$  from  $-2\pi \leq t \leq 2\pi$ .



14. Graph  $f(t) = 2\sec t - 3$  from  $-2\pi \leq t \leq 2\pi$ .



15. Graph  $f(t) = 2\cot t + 3$  from  $-2\pi \leq t \leq 2\pi$ .



*In 16-18, graph each function completely. Label both x and y axis completely for full credit. Be neat!!*

16. Graph **one full period** of the function

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

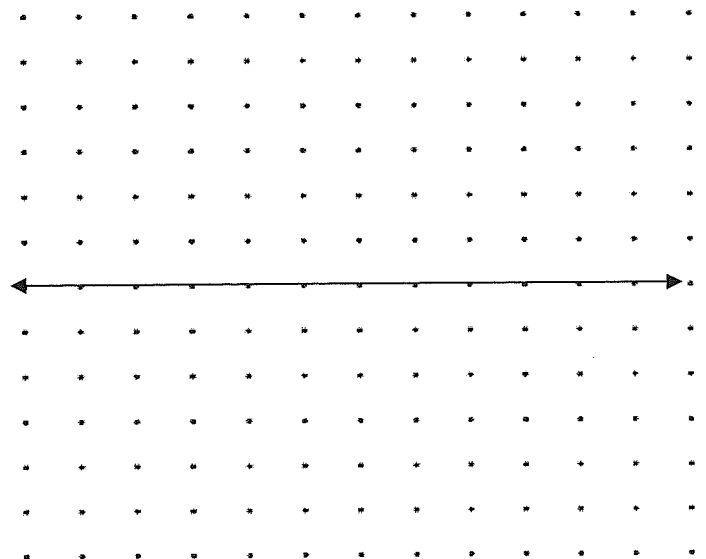
Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

Increments: \_\_\_\_\_

P. Shift: \_\_\_\_\_

V. Shift: \_\_\_\_\_



17. Graph **two full periods** of the function

$$f(t) = 2 \cot\left(3t - \frac{\pi}{3}\right).$$

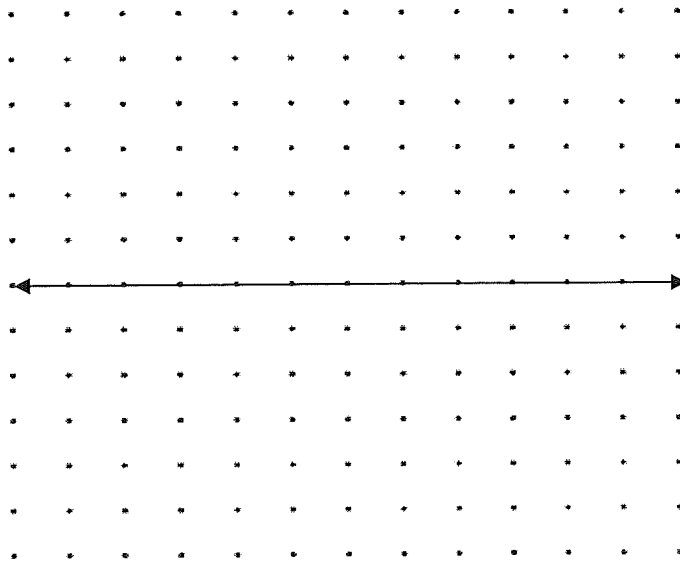
Steepness: \_\_\_\_\_

Period: \_\_\_\_\_

Increments: \_\_\_\_\_

V. Shift: \_\_\_\_\_

1<sup>st</sup> Asymptote: \_\_\_\_\_



18. Graph **one full period** of the function:

$$f(t) = -\sec(2t - 2\pi) - 1.$$

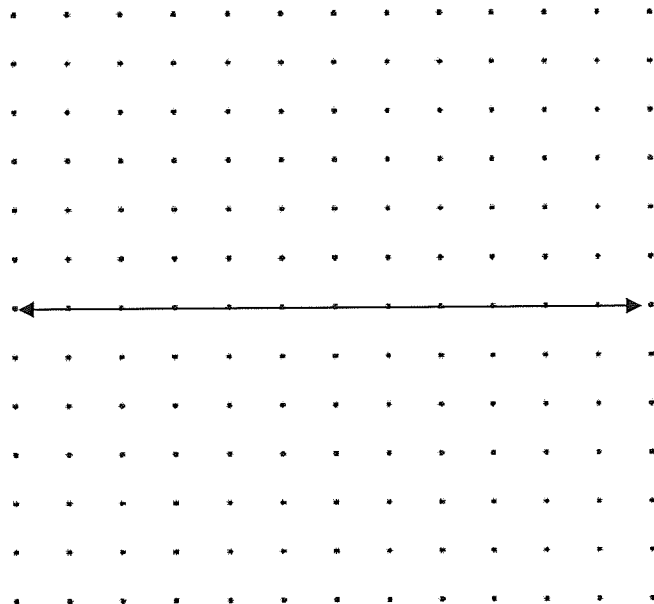
Amplitude: \_\_\_\_\_

Period: \_\_\_\_\_

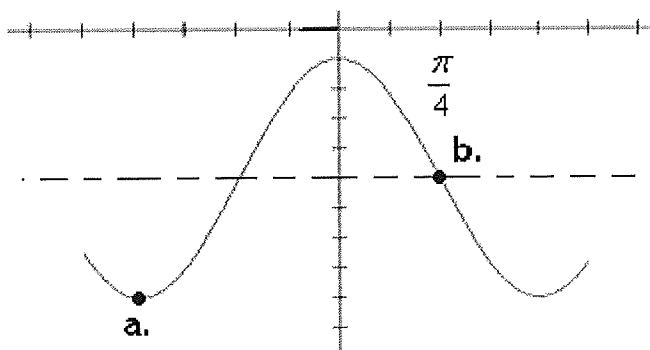
Increments: \_\_\_\_\_

P. Shift: \_\_\_\_\_

V. Shift: \_\_\_\_\_



19. Write **two** equations using **different** trig functions that could be the rule for the graph shown.



a. \_\_\_\_\_

b. \_\_\_\_\_

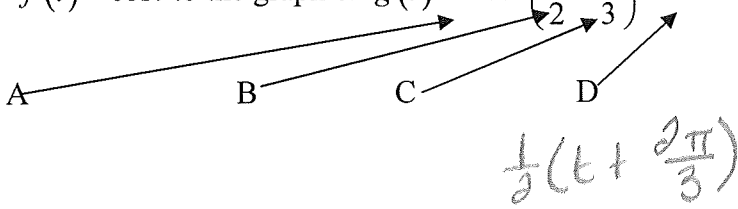
PreCalculus  
 Chapter 7 INDIVIDUAL TEST 2015  
 NON CALCULATOR

Name \_\_\_\_\_

Date \_\_\_\_\_ Hour \_\_\_\_\_

1. Describe the transformations that change the graph of

$$f(t) = \cos t \text{ to the graph of } g(t) = 2 \cos\left(\frac{t}{2} + \frac{\pi}{3}\right) + 3.$$



1. A. VS by 2  
 B. HS by 2  
 C.  $\frac{2\pi}{3}$  left  
 D. up 3

2. Write an equation for the sine function that is compressed vertically by a factor of  $\frac{1}{2}$ , has a period of  $\frac{\pi}{3}$ , is reflected over the x-axis and a phase shift of  $\frac{\pi}{6}$  to the left.

$$\frac{\pi}{3} = \frac{2\pi}{b} \quad \pi b = 6\pi$$

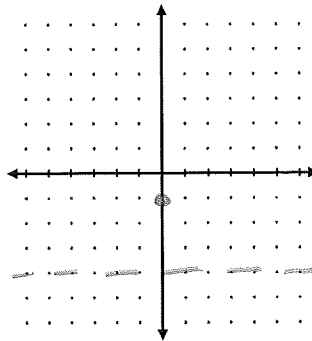
$$b = 6$$

2.  $-\frac{1}{2} \sin 6\left(x + \frac{\pi}{6}\right)$

3. The function  $g(t) = \tan t$  is an \_\_\_\_\_ (choose EVEN or ODD) function.

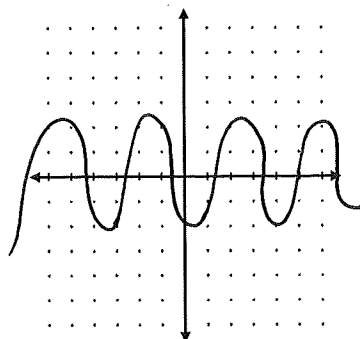
3. odd  
 EVEN or ODD

4. What is the y-intercept of the graph  $g(t) = 3 \cos t - 4$ ?  
 You don't need to graph this one!



4. (0, -1)  
 Write as an ordered pair

5. Name (a) the domain and (b) the range of  $f(t) = -2 \sin t + 3$ .  
 You don't need to graph this one!



$$-2(1) + 3 = 1$$

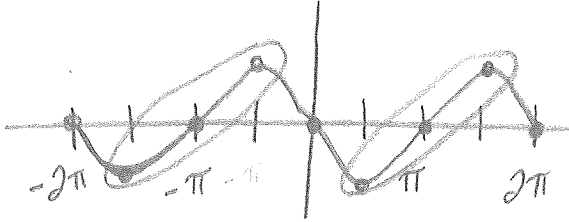
$$-2(-1) + 3 = 5$$

5. all,  $(-\infty, \infty)$   
 domain in interval notation

$[1, 5]$   
 range in interval notation

6. Given  $f(t) = -\sin t$ , what interval is the function increasing from  $[-2\pi, 2\pi]$ .

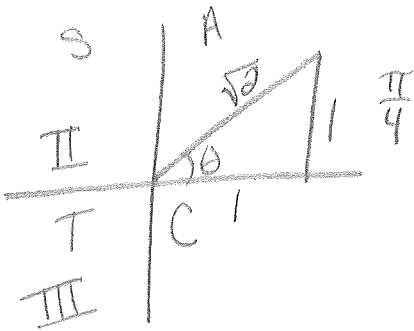
Hint...graph it.



6.  $(-\frac{3\pi}{2}, -\frac{\pi}{2}) \cup (\frac{\pi}{2}, \frac{3\pi}{2})$   
 Answer in interval notation

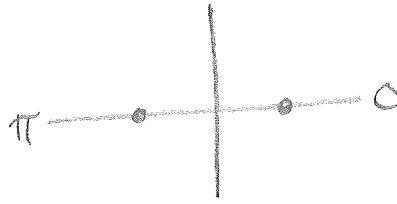
For #7-9, find **all** values for which the given statement is true.

7.  $\cos t = \frac{\sqrt{2}}{2} = -\frac{1}{\sqrt{2}}$



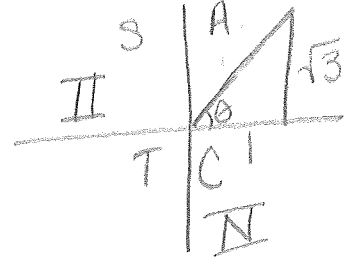
7.  $\frac{3\pi}{4} \pm 2k\pi$   
 $\frac{5\pi}{4} \pm 2k\pi$

8.  $\sin t = 0$



8.  $0 \pm 2k\pi$   
 $\pi \pm 2k\pi$

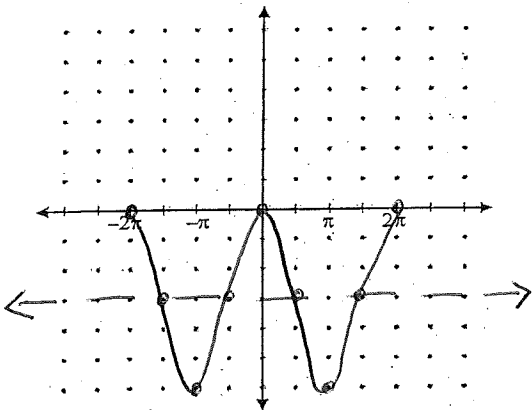
9.  $\tan t = -\sqrt{3}$



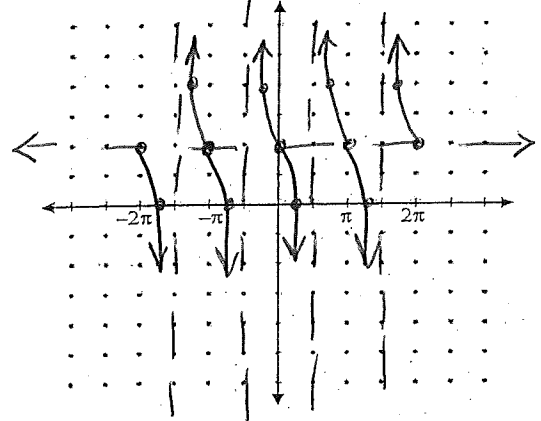
9.  $\frac{2\pi}{3} \pm 2k\pi$   
 $\frac{5\pi}{3} \pm 2k\pi$

For questions 10-11, write the equation of the functions graphed. These do not have a phase shift.

10.  $f(t) = 3\cos x - 3$

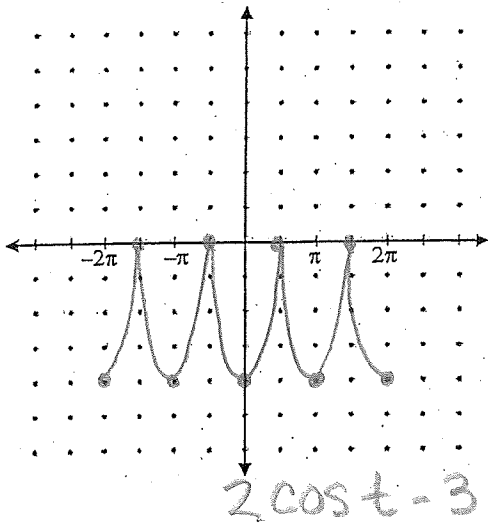


11.  $f(t) = -2\tan t + 2$

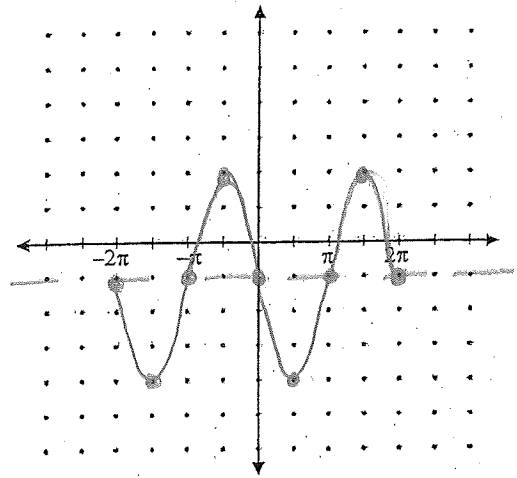


For questions 12-18, graph the function neatly.

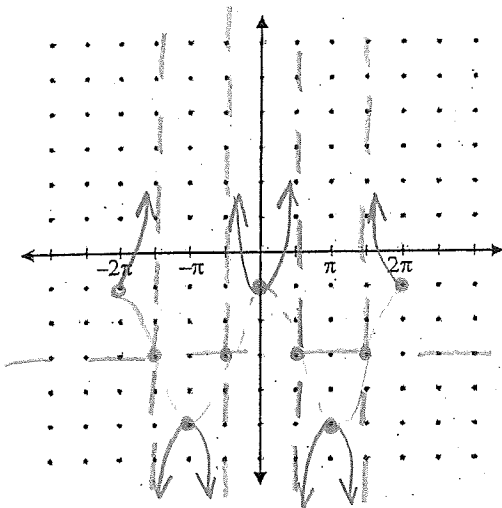
12. Graph  $f(t) = -4|\cos t|$  from  $-2\pi \leq t \leq 2\pi$ .



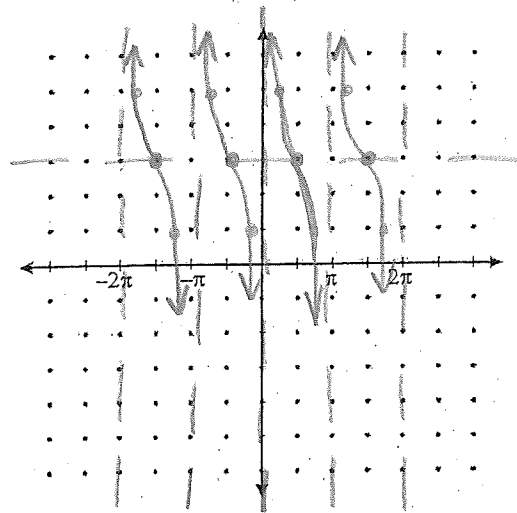
13. Graph  $f(t) = -3\sin t - 1$  from  $-2\pi \leq t \leq 2\pi$ .



14. Graph  $f(t) = 2\sec t - 3$  from  $-2\pi \leq t \leq 2\pi$ .



15. Graph  $f(t) = 2\cot t + 3$  from  $-2\pi \leq t \leq 2\pi$ .



In 16-18, graph each function completely. Label both x and y axis completely for full credit. Be neat!!

16. Graph one full period of the function

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

$$3\left(t + \frac{\pi}{12}\right)$$

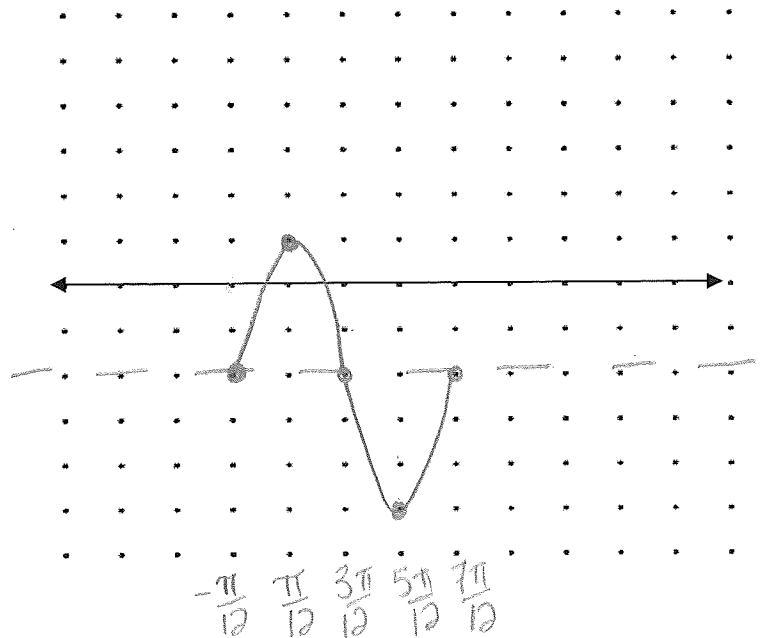
Amplitude: 3

Period:  $\frac{2\pi}{3}$

Increments:  $\frac{2\pi}{3} \cdot \frac{1}{4} = \frac{2\pi}{12} = \frac{\pi}{6}$

P. Shift:  $\frac{\pi}{12}$  left ( $-\frac{\pi}{12}$ ) start

V. Shift: down 2



17. Graph **two full periods** of the function

$$f(t) = 2 \cot\left(3t - \frac{\pi}{3}\right).$$

Steepness: 2

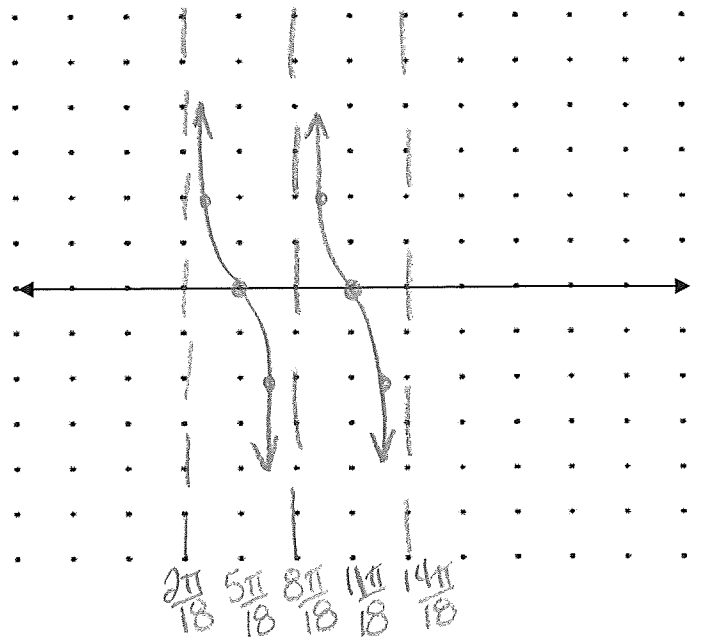
Period:  $\frac{\pi}{3}$

Increments:  $\frac{\pi}{3} \cdot \frac{1}{2} = \frac{\pi}{6}$   $(\frac{3\pi}{18})$   
 $3t - \frac{\pi}{3} = 0$

V. Shift: \_\_\_\_\_  $3t = \frac{\pi}{3}$

1<sup>st</sup> Asymptote:  $\frac{\pi}{9} \rightarrow (\frac{2\pi}{18})$   $t = \frac{\pi}{9}$

~~$\frac{14\pi}{18}$~~   ~~$\frac{12\pi}{18}$~~   ~~$\frac{10\pi}{18}$~~   ~~$\frac{8\pi}{18}$~~



18. Graph **one full period** of the function:

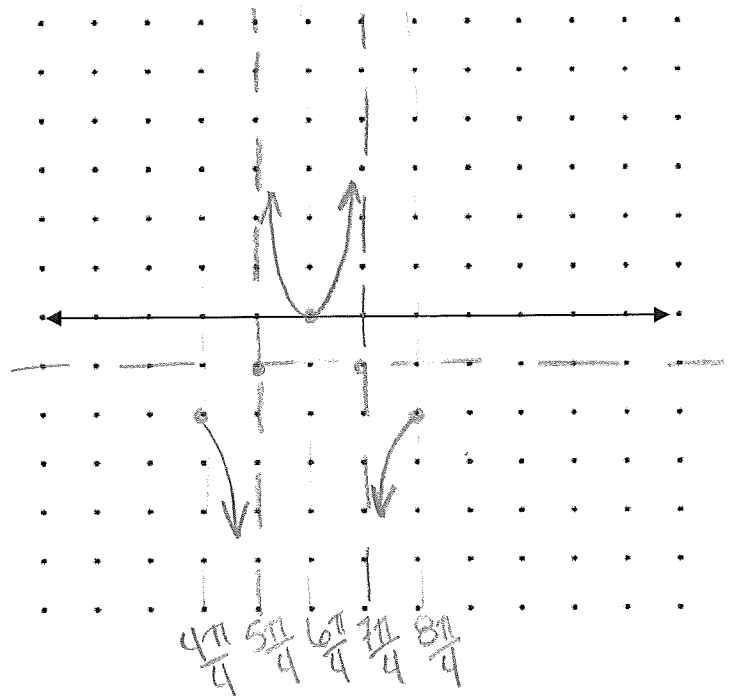
$$f(t) = -\sec(2t - 2\pi) - 1.$$

Amplitude: 1

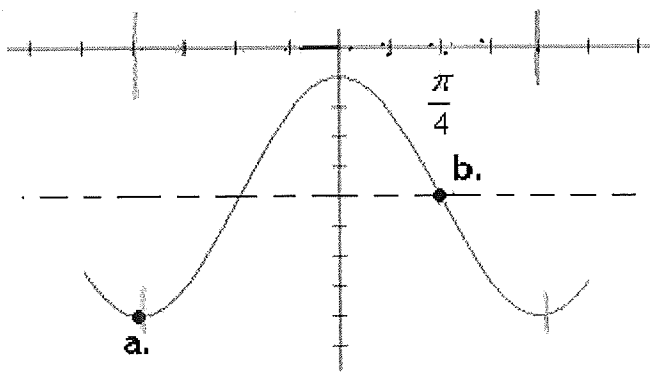
Period:  $\frac{2\pi}{2} = \pi$   $2(t - \pi)$

Increments:  $\frac{\pi}{4}$

P. Shift:  $\pi$  right  $(\frac{4\pi}{4})$   
 V. Shift: down 1  $\leftarrow$  start



19. Write **two** equations using **different** trig functions that could be the rule for the graph shown.



$$\frac{\pi}{4} \cdot \frac{1}{2} = \frac{\pi}{8}$$

$$\frac{8\pi}{8} = \frac{2\pi}{b}$$

$$(8\pi)b = 16\pi$$

$$b = 2$$

a.  $-4 \cos 2\left(x + \frac{4\pi}{8}\right) - 5$

b.  $-4 \sin 2\left(x - \frac{2\pi}{8}\right) - 5$



