

**F.S.T.**  
**Chapter 4b (4-6 to 4-9) Review**

**Name** \_\_\_\_\_  
**Block** \_\_\_\_\_ **Date** \_\_\_\_\_

**Non-Calculator**

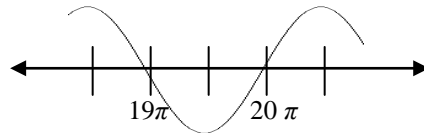
For each function, **a)** List the amplitude, period,  $x$ -intercepts,  $y$ -intercept, and vertical asymptotes (if any), and **b)** Graph the function for all  $x$ :  $-\pi \leq x \leq 2\pi$

1.  $y = \sin x$

2.  $y = \cos x$

3.  $y = \tan x$

4. Below is part of the graph of a function  $f$ . Which of the following could be an equation for  $f$ :  $f(x) = \cos x$  or  $f(x) = \sin x$ ? **Justify your answer.**



In problems 6-12, list the period, amplitude, phase shift and vertical shift of the given function. Give the equations of two asymptotes (if any). Then, draw at least one cycle of the graph of the given function

5.  $y = \frac{1}{2} \sin\left(\frac{1}{2}x\right)$

6.  $y = 8 \cos\left(\frac{1}{4}x\right)$

7.  $y = \tan\left(x - \frac{\pi}{2}\right) + 3$

8.  $y = \sin\left(x + \frac{\pi}{4}\right)$

9.  $y = 2\cos(x - \pi) + 1$

10.  $y = 6 - 5\sin\left(4\left(x + \frac{\pi}{2}\right)\right)$

11.  $y = -4 + 2\cos\left(x - \frac{\pi}{3}\right)$

12.  $y = 3\tan\left(2\left(x + \frac{\pi}{4}\right)\right) - 5$

13. Write the equation of a cosine function under  $S(x, y) \rightarrow (2x, y)$ . List the amplitude, period, phase shift, and vertical shift.

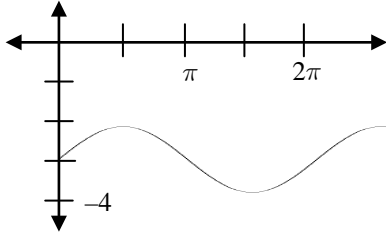
14. Write the equation of a tangent function under  $T(x, y) \rightarrow \left(x - \frac{\pi}{3}, y + 2\right)$ . List the amplitude, period, phase shift, and vertical shift.

15. Write the equation of a sine function whose amplitude is  $\frac{1}{3}$ , period is  $4\pi$ , phase shift is  $\pi$ , and vertical shift is  $-1$ .

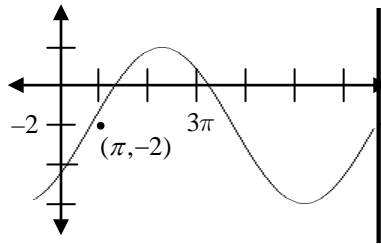
16. Write the equation of a cosine function whose amplitude is 4, period is  $\frac{\pi}{2}$ , and phase shift is  $-\frac{3\pi}{2}$ .

In 17-22 list the period, amplitude, phase shift and vertical shift. Then, write the equation of the given graph based on the given function.

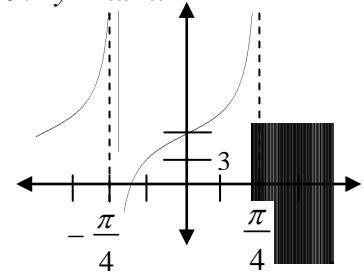
17.  $y = \cos x$



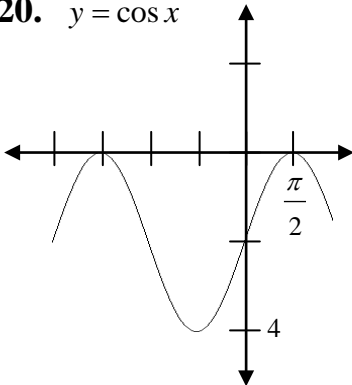
18.  $y = \sin x$



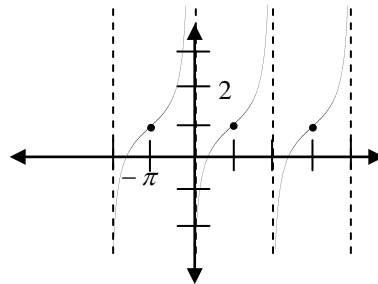
19.  $y = \tan x$



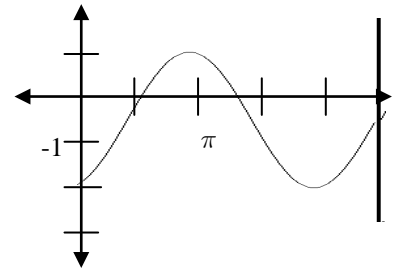
20.  $y = \cos x$



21.  $y = \tan x$



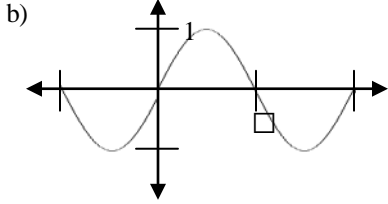
22.  $y = \sin x$



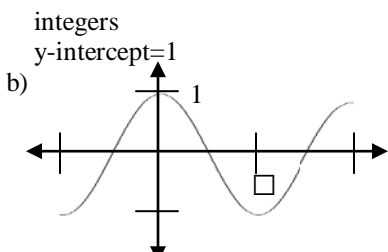
**Review Questions: STUDY YOUR CHAPTER 4A (4-1 to 4-5) TEST!!!!!!!!!!!!!!**

## Chapter 4b (4-6 to 4-9) Review Key

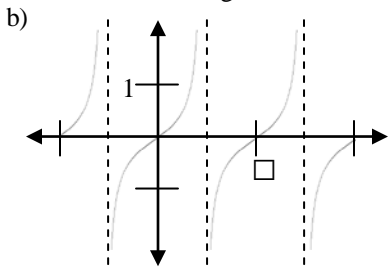
- 1.a) Amp: 1 Per:  $2\pi$   
 x-intercepts:  $k\pi$  where  $k$ =integers  
 y-intercept=0



- 2.a) Amp: 1 Per:  $2\pi$   
 x-intercepts:  $k \cdot \frac{\pi}{2}$ , where  $k$ =odd integers  
 y-intercept=1

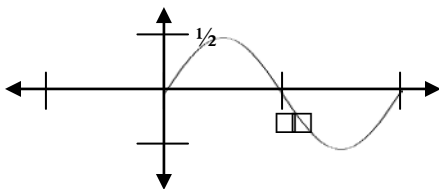


- 3.a) Amp: N/A Per:  $\pi$   
 x-intercepts:  $k\pi$  where  $k$ =integers  
 y-intercept: 0 VA:  $x = k \cdot \frac{\pi}{2}$ , where  $k$ =odd integers

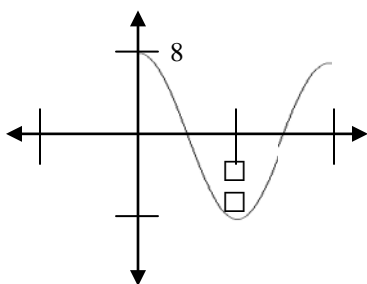


4.  $f(x) = \sin x$  because the intercepts are whole number multiples of  $\pi$

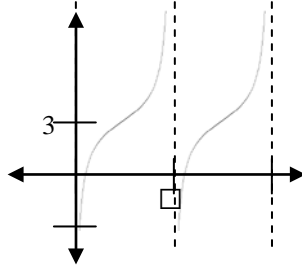
5. Amp:  $\frac{1}{2}$  Per:  $4\pi$   
 Phase: 0 Vert: 0



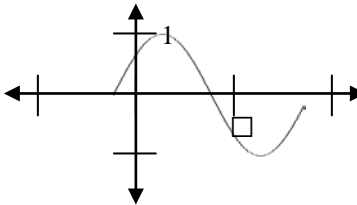
6. Amp: 8 Per:  $8\pi$   
 Phase: 0 Vert: 0



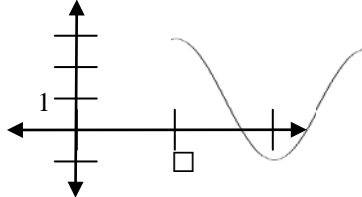
7. Amp: N/A Per:  $\pi$   
 Phase:  $\frac{\pi}{2}$  Vert: 3



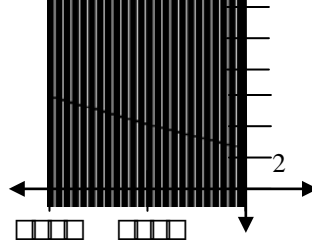
8. Amp: 1 Per:  $2\pi$   
 Phase:  $-\frac{\pi}{2}$  Vert: 0



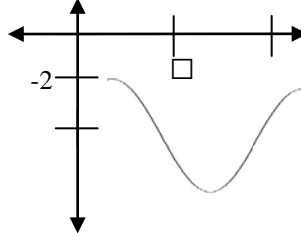
9. Amp: 2 Per:  $2\pi$   
 Phase:  $\frac{\pi}{2}$  Vert: 1



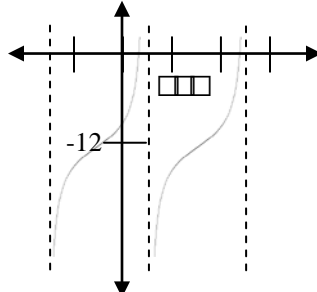
10. Amp: 5 Per:  $\frac{\pi}{2}$   
 Phase:  $\frac{\pi}{4}$  Vert: 6



11. Amp: 2 Per:  $2\pi$   
 Phase:  $\frac{\pi}{2}$  Vert: -4



12. Amp: N/A Per:  $\pi$   
 Phase:  $-\frac{\pi}{2}$  Vert: -12



13.  $y = \cos\left(\frac{1}{2}x\right)$   
 Amp: 1 Per:  $4\pi$   
 Phase: 0 Vert: 0

14.  $y = \tan\left(x + \frac{\pi}{3}\right) = 2$

15.  $y = \frac{1}{3}\sin\frac{1}{2}(x - \pi) - 1$

16.  $y = 4\cos 4\left(x + \frac{3\pi}{2}\right)$

17. Amp: 1 Per:  $2\pi$   
 Phase:  $\frac{\pi}{2}$  Vert: -3  
 $y = \cos\left(x - \frac{\pi}{2}\right) - 3$

18. Amp: 4 Per:  $6\pi$   
 Phase:  $\frac{\pi}{2}$  Vert: -2  
 $y = 4\sin\frac{1}{3}(x - \pi) - 2$

19. Amp: N/A Per:  $\pi$   
 Phase: 0 Vert: 6  
 $y = \tan(2x) + 6$

20. Amp: 2 Per:  $2\pi$   
 Phase:  $\frac{\pi}{2}$  Vert: -2  
 $y = 2\cos\left(x - \frac{\pi}{2}\right) - 2$

21. Amp: N/A Per:  $2\pi$   
 Phase:  $\pi$  Vert: 1  
 $y = \tan\frac{1}{2}(x - \pi) + 1$

22. Amp:  $\frac{3}{2}$  Per:  $2\pi$   
 Phase:  $\frac{\pi}{2}$  Vert:  $-\frac{1}{2}$   
 $y = \frac{3}{2}\sin\left(x - \frac{\pi}{2}\right) - \frac{1}{2}$