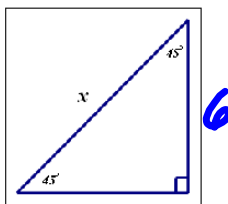


1) Special Right Triangles: (3 points) Find the value of x in the triangle below.



$$x = 6\sqrt{2}$$

SPECIAL RIGHT TRIANGLE.

ANY SIDE COULD BE GIVEN.

Algebra II Review Sheet Chapter 13 Trigonometric Functions.notebook

2) **Section 13.3** (4 points) Convert each degree measure to radians. If given in radians, convert to degrees. Leave answers in terms of π (when appropriate).

a) 15°

b) $\frac{-3\pi}{4}$

c) -315°

d) $\frac{13\pi}{6}$

$$a) \quad 15^\circ = 15^\circ \left(\frac{\pi}{180^\circ} \right) = \frac{\pi}{12}$$

$$b) \quad \frac{-3\pi}{4} = \frac{-3\pi}{4} \left(\frac{180^\circ}{\pi} \right) = -3(45^\circ)$$

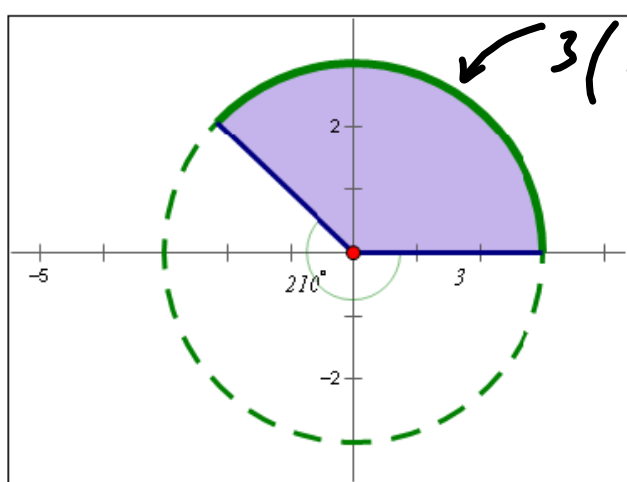
$$c) \quad -315^\circ = -315^\circ \left(\frac{\pi}{180^\circ} \right) = \frac{-315\pi}{180}$$

$$= \frac{-63\pi}{36} = \frac{-7\pi}{4}$$

$$d) \quad \frac{13\pi}{6} = \frac{13\pi}{6} \left(\frac{180^\circ}{\pi} \right) = 13(30^\circ)$$

$$= 390^\circ$$

3) Section 13.3 (4 points) Find the perimeter of the sector shaded below.



$$S = r\theta$$

MUST BE IN RADIANS

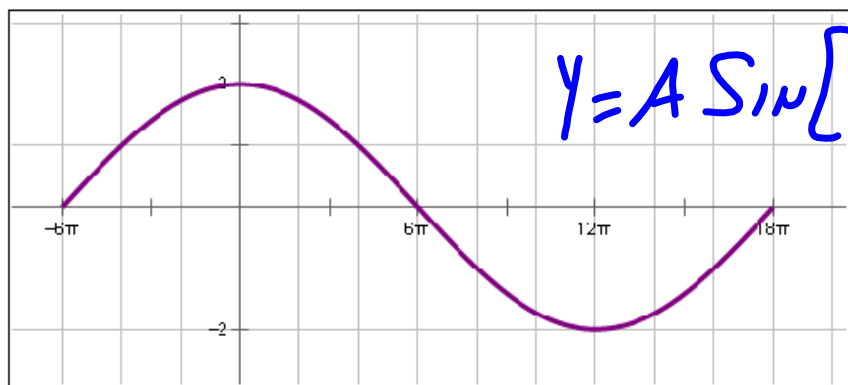
$$150^\circ = \frac{5\pi}{6} \text{ RADIANS}$$

$$\text{PERIMETER} = 3 + 3 + \frac{5\pi}{2}$$

$$= 6 + \frac{5\pi}{2} = \frac{12 + 5\pi}{2}$$

OR

$$2\pi(3)\left(\frac{150}{360}\right) + 6$$



$$Y = A \sin[B(x+c)] + D$$

4) Section 13.7 (6 points) Give the amplitude, period, and an equation (using sine) for the curve above.

$$\text{PERIOD} = 24\pi$$

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

$$24\pi = \frac{2\pi}{B}$$

$$\text{Amp: } 2$$

$$24\pi B = 2\pi$$

$$B = \frac{2\pi}{24\pi} = \frac{1}{12}$$

$$\text{SHIFT: LEFT } 6\pi \\ \text{Down } 0$$

$$Y = A \sin[B(x+c)] + D$$

$$Y = 2 \sin\left[\frac{1}{12}(x + 6\pi)\right] + 0$$

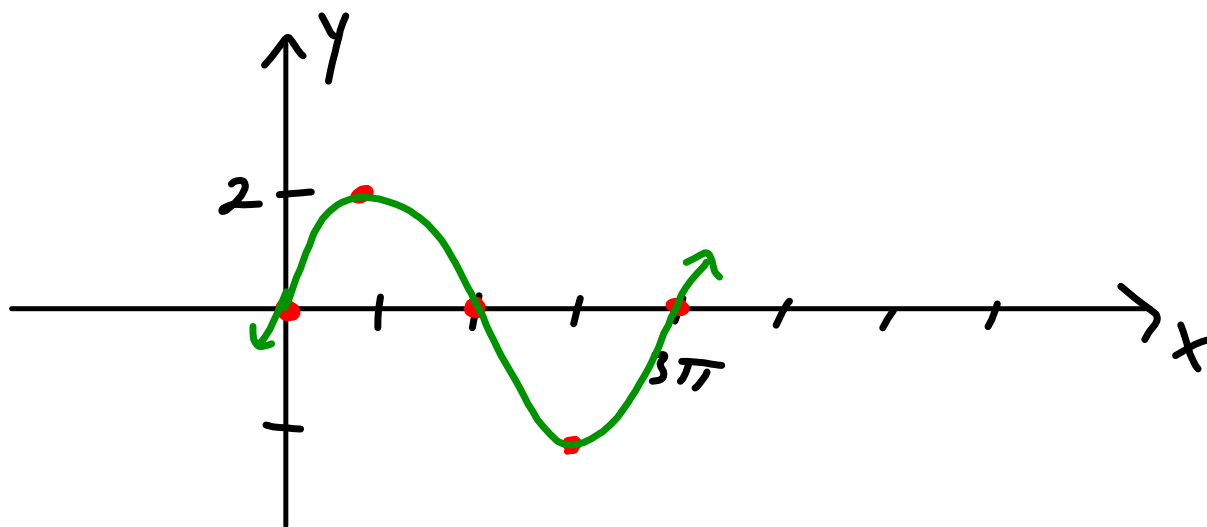
$$Y = 2 \sin\left[\frac{1}{12}x + \frac{\pi}{2}\right]$$

5) Section 13.4 (6 points) Find the period and amplitude of the equation given below. Then graph the function.

$$f(x) = 2 \sin\left(\frac{2}{3}x\right)$$

$$P = \frac{2\pi}{\frac{2}{3}} = 2\pi \left(\frac{3}{2}\right) = 3\pi$$

$$\text{Amp} = 2$$



6) **Section 13.5** (6 points) Identify the period, amplitude, domain, and range of the function given below. Then graph the function.

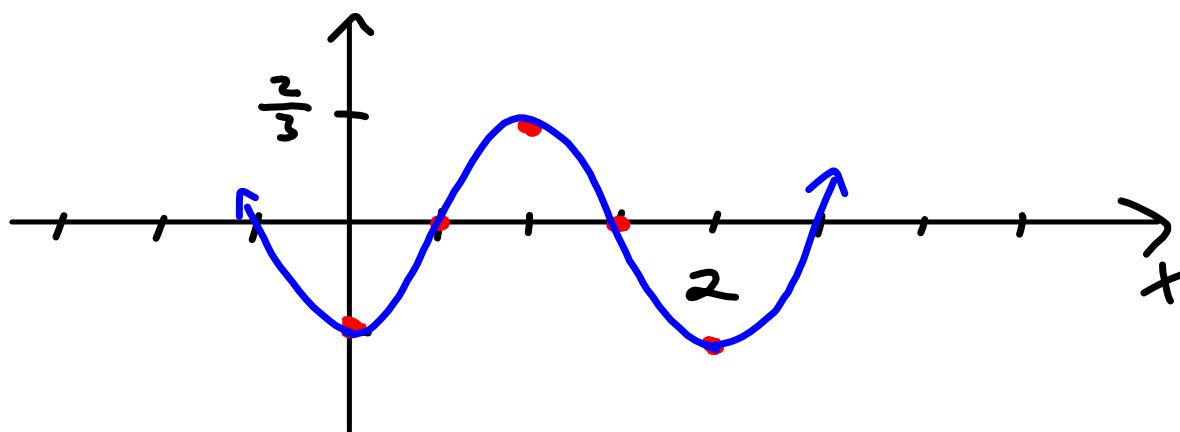
$$f(x) = \frac{-2}{3} \cos(\pi x)$$

$$\text{PERIOD} = \frac{2\pi}{\pi} = 2$$

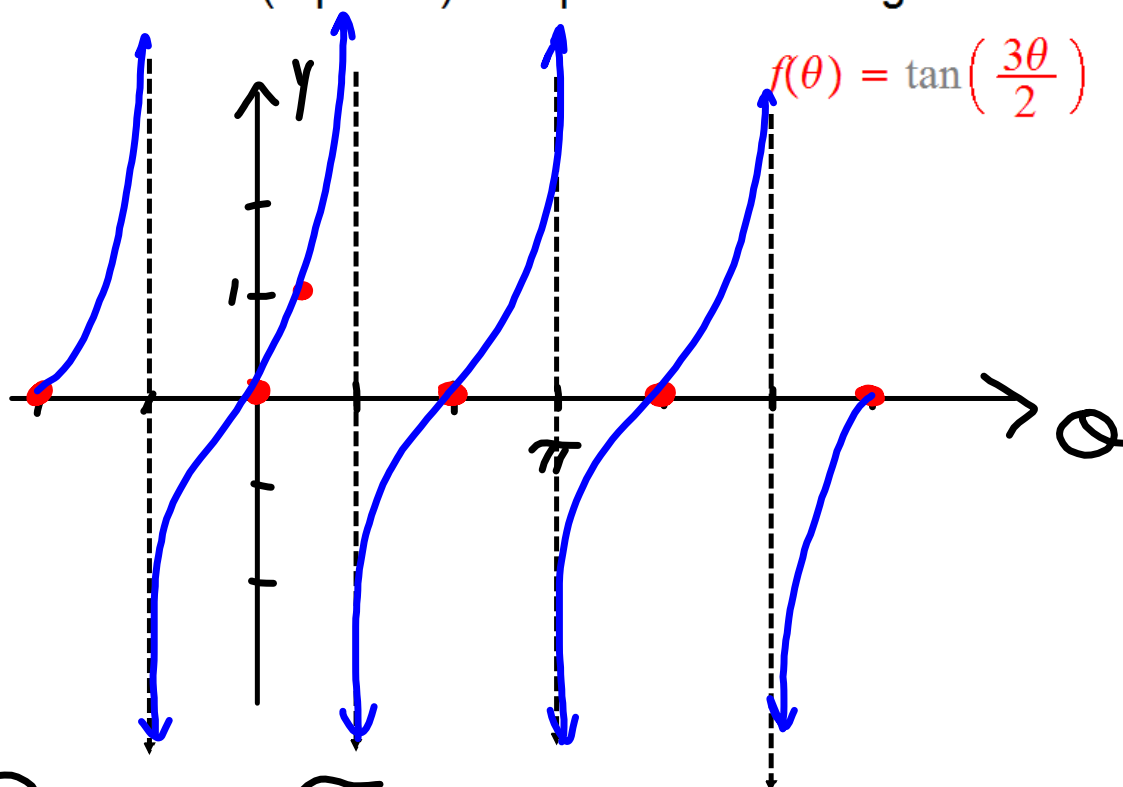
$$\text{Amp: } \frac{2}{3}$$

DOMAIN: ALL REALS

$$\text{RANGE: } -\frac{2}{3} \leq y \leq \frac{2}{3}$$



7) Section 13.6 (6 points) Graph the function given below.



$$\text{PERIOD} = \frac{\pi}{\frac{3}{2}} = \frac{2\pi}{3}$$

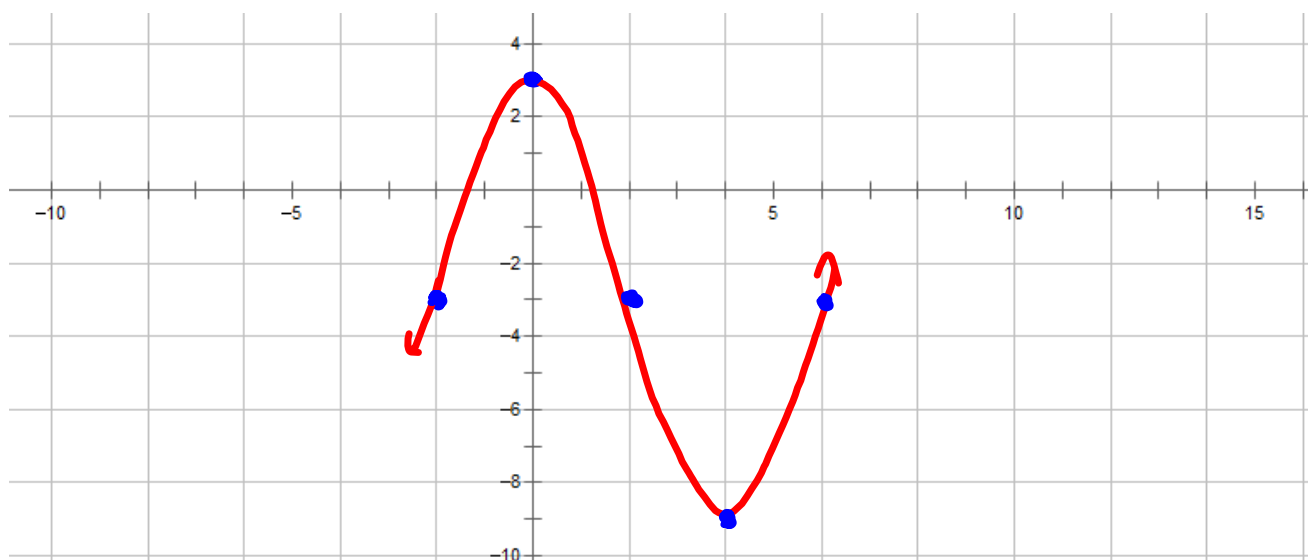
8) Section 13.7 (10 points) Sketch the graph of the equation given below.

$$y + 3 = 6 \sin \left[\frac{\pi x}{4} + \frac{\pi}{2} \right]$$

$$Y = 6 \sin \left[\frac{\pi}{4} (x + 2) \right] - 3$$

$$\text{PERIOD} = \frac{2\pi}{\frac{\pi}{4}} = 2\pi \left(\frac{4}{\pi} \right) = 8$$

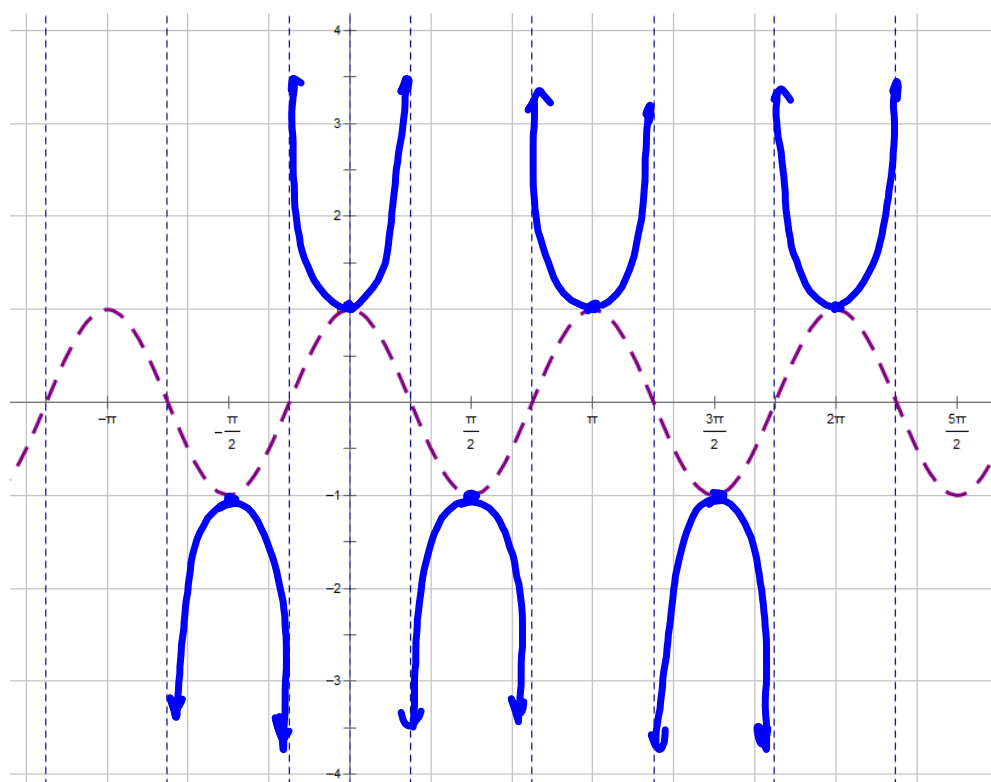
SHIFT
LEFT 2
DOWN 3



9) Section 13.8 (6 points) Graph the function below. The problem could be any reciprocal function ($\sec(x)$, $\csc(x)$, $\cot(x)$)

$$f(x) = \sec(2x)$$

FIRST, GRAPH THE RECIPROCAL FUNCTION $y = \cos(2x)$.
DRAW ASYMPTOTES WHERE $y = \cos(2x)$ IS 0.



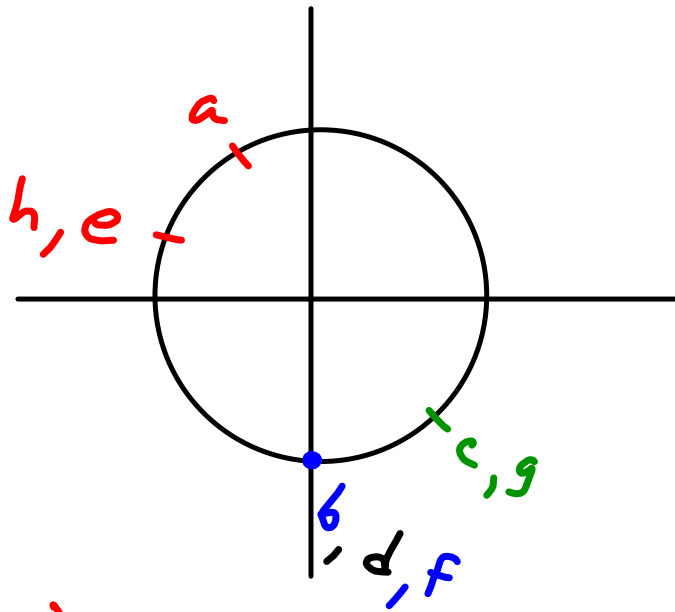
$$y = \cos(2x)$$

$$\text{PERIOD: } \frac{2\pi}{2} = \pi$$

$$\text{AMPLITUDE: } 1$$

10) Sections 13.2,(8 points) Find the value of the expressions below.

- a) $\sin \frac{2\pi}{3}$
- b) $\cos(-\frac{\pi}{2})$
- c) $\cos 315^\circ$
- d) $\sin(-450^\circ)$
- e) $\tan \frac{5\pi}{6}$
- f) $\csc(-\frac{5\pi}{2})$
- g) $\cot 315^\circ$
- h) $\sec(-210^\circ)$



a) $\frac{\sqrt{3}}{2}$

b) 0

c) $\frac{\sqrt{2}}{2}$

d) -1

e) $\frac{\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$

f) -1

g) $\frac{\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} = -1$

h) $\frac{-2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$