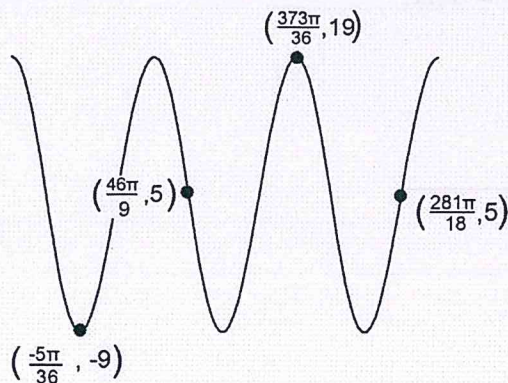


1. Graph one period of this function. Give the coordinates of all max's, min's, and points on the midline.

$$y = -4\sin\left(\frac{5}{3}\left(x - \frac{7\pi}{8}\right)\right) - 3$$

2. Write both a Sin and Cos equation for this graph



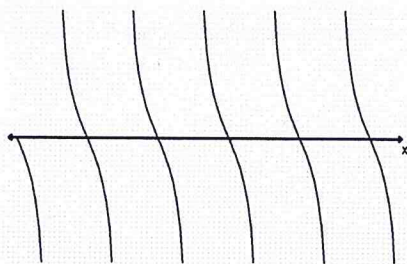
Sin EQ:

Cos EQ:

3. Write the equation of each graph which is a transformation of the Parent Tangent Function.

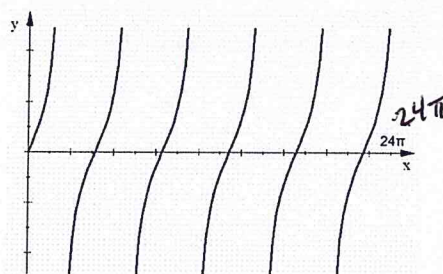
a) Window: $-\frac{\pi}{3}$ to $\frac{8\pi}{2}$

EQ:



b)

EQ:



4. State the period of this function: $y = -9\tan\frac{17x}{9}$

5. Given the function $y = \tan?x$ has a period of $\frac{34\pi}{25}$ find 5 VA and 5 x-int.

x-int:

VA:

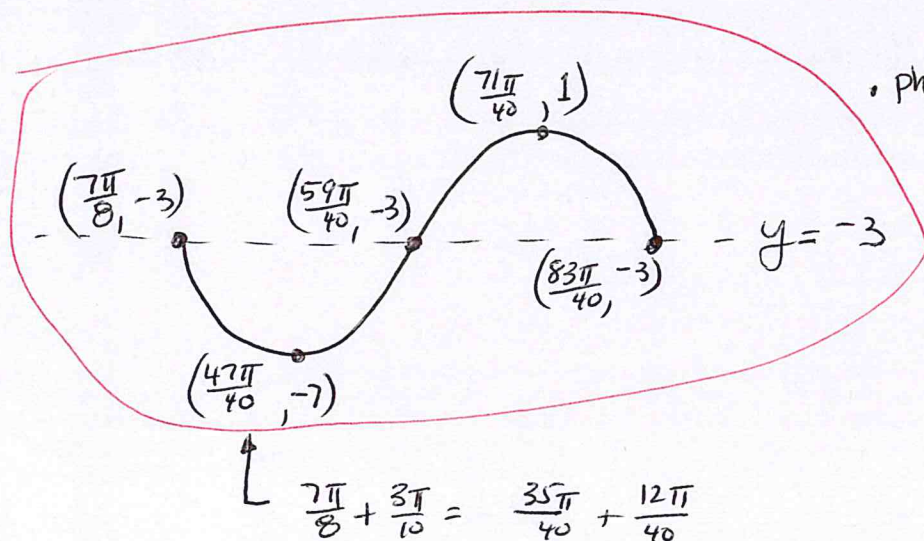
$$(1) y = -4 \sin\left(\frac{5}{3}\left(x - \frac{7\pi}{8}\right)\right) - 3$$

• Amplitude = 4 • upside down

 • midline: $y = -3$

$$\text{period} = \frac{2\pi}{\frac{5}{3}} = 2\pi \cdot \frac{3}{5} = \frac{6\pi}{5}$$

$$\frac{1}{4} \text{ period} = \frac{1}{4} \cdot \frac{6\pi}{5} = \frac{3\pi}{10}$$

 • phase shift: $\frac{7\pi}{8}$ RT


$$(2) \text{ midline} = 5 \quad \text{Amplitude} = 14$$

$$\text{period: } \frac{\frac{373\pi}{36} - \frac{-5\pi}{36}}{1\frac{1}{2}} = \frac{\frac{378\pi}{36}}{\frac{3}{2}} = \frac{378\pi}{36} \cdot \frac{2}{3} = 7\pi \rightarrow b \frac{2\pi}{7\pi} = \frac{2}{7}$$

$$\underline{\cos} \text{ if start at } \left(-\frac{5\pi}{36}, -9\right) \quad y = -14 \cos\left(\frac{2}{7}\left(x + \frac{5\pi}{36}\right)\right) + 5$$

$$\underline{\sin} \text{ if start at } \left(\frac{46\pi}{9}, 5\right) \quad y = -14 \sin\left(\frac{2}{7}\left(x - \frac{46\pi}{9}\right)\right) + 5$$

(3)

$$a) \text{ period} = \frac{\frac{3}{2} \cdot \frac{8\pi}{2} - \frac{-\pi}{3} \cdot \frac{2}{2}}{5\frac{1}{2}} = \frac{\frac{24\pi}{6} + \frac{2\pi}{6}}{\frac{11}{2}} = \frac{\frac{26\pi}{6}}{\frac{11}{2}} = \frac{26\pi}{6} \cdot \frac{2}{11} = \frac{26\pi}{33} \rightarrow b = \frac{\pi}{\frac{26\pi}{33}} = \frac{33}{26}$$

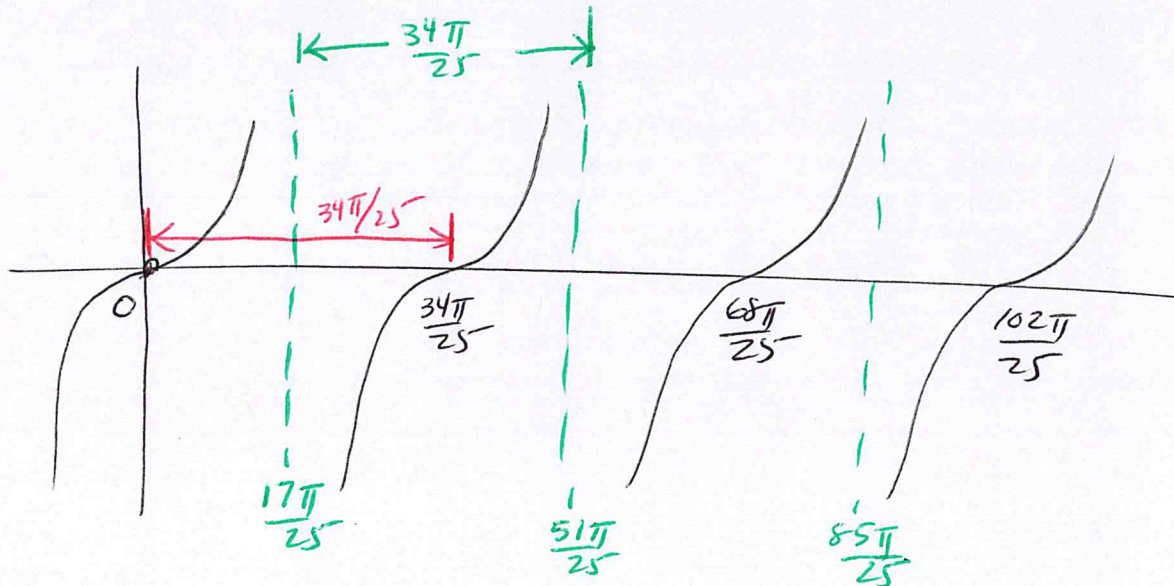
$$y = -\tan \frac{33x}{26}$$

$$b) \text{ period} = \frac{24\pi}{5\frac{1}{2}} = 24\pi \cdot \frac{2}{11} = \frac{48\pi}{11} \quad b = \frac{\pi}{\frac{48\pi}{11}} = \frac{11}{48}$$

$$y = \tan \frac{11x}{48}$$

(4) $\text{period} = \frac{\pi}{\frac{17}{9}} = \frac{9\pi}{17}$

(5) $\text{period} = \frac{34\pi}{25}$



X-int: $0, \pm \frac{34\pi}{25}, \pm \frac{68\pi}{25}, \pm \frac{102\pi}{25}, \dots$

VA: $\pm \frac{17\pi}{25}, \pm \frac{51\pi}{25}, \pm \frac{85\pi}{25}, \dots$