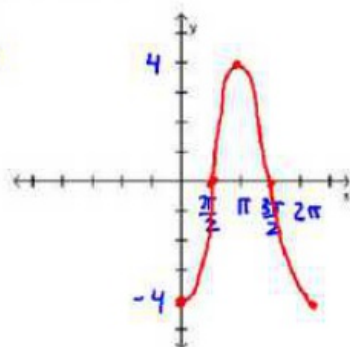Trigonometry PracticeTest C (Graphing and Identities)
Name_____
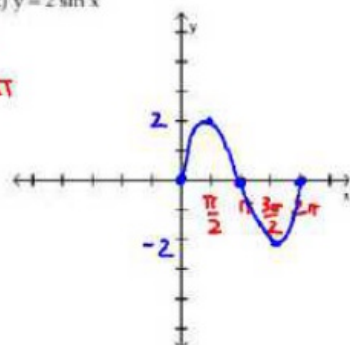
Graph the function.

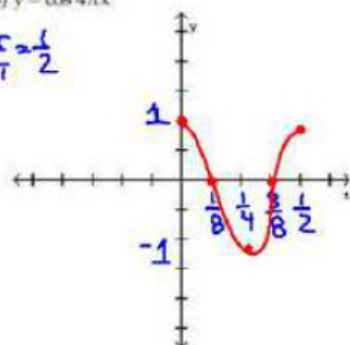1) $y = -4 \cos x$

AMP = 4

Period = 2π

2) $y = 2 \sin x$
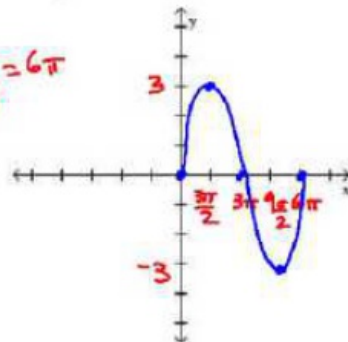
Amp = 2

Period = 2π

3) $y = \cos 4\pi x$

Period = $\frac{2\pi}{4\pi} = \frac{1}{2}$
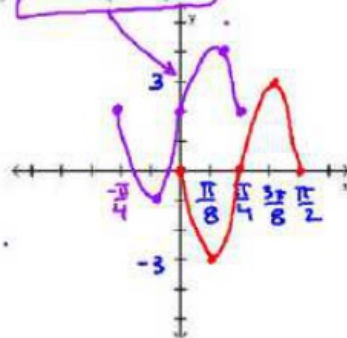
4) $y = 3 \sin \frac{1}{3}x$

Amp = 3

Period = $\frac{2\pi}{\left(\frac{1}{3}\right)} = 6\pi$

3

-3

$\frac{3\pi}{2}$ 3π $\frac{9\pi}{2}$ 6π

Find the amplitude, period, phase shift, and vertical shift. Then Graph the function

5) $y = -3 \sin(4x + \pi) + 2$

3

-3

$-\frac{\pi}{4}$ $\frac{\pi}{8}$ $\frac{\pi}{4}$ $\frac{3\pi}{8}$ $\frac{\pi}{2}$

Amp: 3

Reflection over
x-axis

Period = $\frac{2\pi}{4} = \frac{\pi}{2}$

VS: Up 2

Phase:

$4x + \pi = 0$

$4x = -\pi$

$x = -\frac{\pi}{4}$

Graph the function.

6) $y = -\tan 3x$

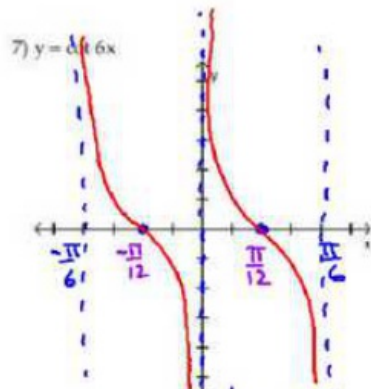$-\frac{\pi}{6}$ $\frac{\pi}{2}$ $\frac{\pi}{3}$ $\frac{\pi}{2}$
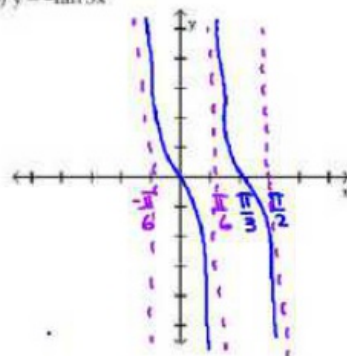
reflection over x-axis

Period = $\frac{\pi}{3}$ ← x-intercept

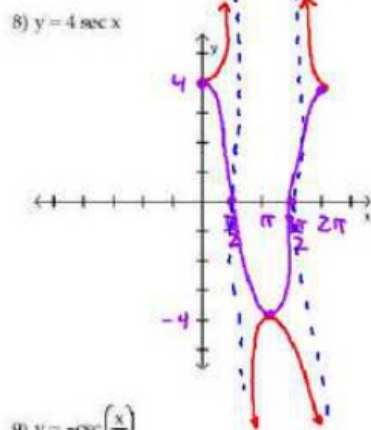1st 2 Asymptotes: $\pm \frac{\pi}{6}$

3rd Asymptote: $\frac{\pi}{6} + \frac{\pi}{3} = \frac{\pi}{2}$

2

7) $y = \cot 6x$

$period = \dfrac{\pi}{6}$

y-axis alway VA

1st 2 asym: $\pm \dfrac{\pi}{6}$

8) $y = 4 \sec x$

$y = 4 \cos x$

9) $y = -\csc\left(\dfrac{x}{3}\right)$
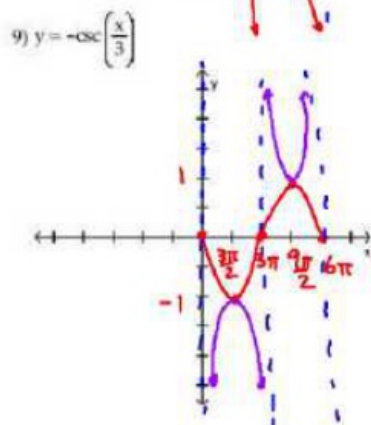
$y = -\sin\left(\dfrac{x}{3}\right)$

reflection over x-axis

$period = \dfrac{2\pi}{\left(\frac{1}{3}\right)} = 6\pi$

3

Write an equation for a sine curve that has the given amplitude and period, and which passes through the given point.

10) Amplitude 10, period $\frac{\pi}{3}$, point $(0, 0)$

$$y = A \sin Bx$$

$$\boxed{y = 10 \sin 6x}$$

$$B = \frac{2\pi}{\text{period}} = \frac{2\pi}{\left(\frac{\pi}{3}\right)} = 6$$

Solve the problem.

11) Tides go up and down during a 12.4 hour period(half lunar day). The average depth of a certain river is 10 m and ranges from a low tide of 7 m to a high tide of 13 m. The variation can be approximated by a sinusoidal curve.

a) Write an equation that gives the approximate variation y, if x is the number of hours after midnight if high tide occurs at 9:00 am.

$$y = A \cos B(t - T) + C$$

$$A = \frac{13 - 7}{2} = 3$$

b) Determine the height of the tide at 11 am. $\boxed{y = 3 \cos \frac{2\pi}{12.4}(t - 9) + 10}$

11.586 m

$$C = \frac{13 + 7}{2} = 10$$

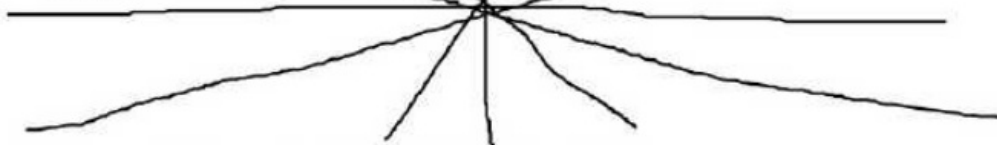c) Determine the time of day that the height of the tide is 12 m.

7.34   (.34)(60) $\boxed{7:20 \text{ am}}$

$$B = \frac{2\pi}{12.4}$$

$$T = 9$$

12) A weight attached to a spring is pulled down 5 inches below the equilibrium position. Assuming that the period of the system is $\frac{1}{6}$ second, determine a trigonometric model that gives the position of the weight at time t seconds.

13) The average high temperatures for Grand Junction, CO are given below.

Month	1	2	3	4	5	6	7	8	9	10	11	12
Temperature (°F)	37	45	56	64	75	87	92	90	80	67	50	39

Model this data using your calculator and then using that model, predict the temperature during the 6th month. How close is this prediction to the actual temperature during that month?