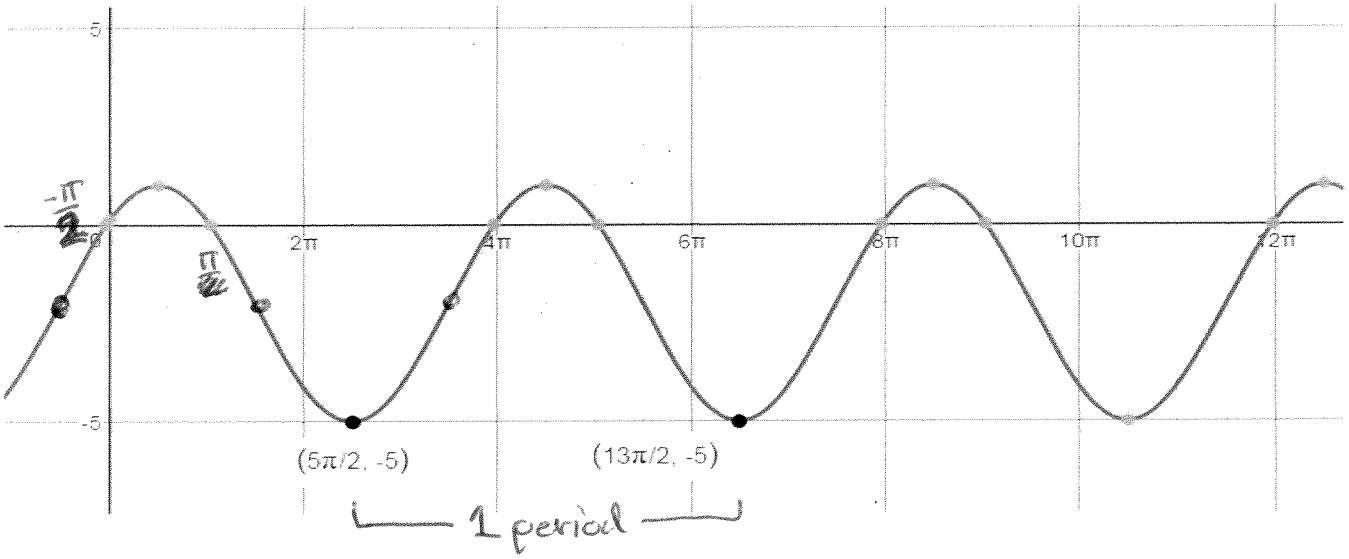
Name Mine Date _____

# Math 112: #10 A/B

**A) (No calculator)** Find an equation of the form $y = A\sin\big(b(x-c)\big) + d$ for the function represented on the graph below. The maximum and minimum $y$-values on the curve are 1 and -5, respectively.




Amplitude $a = \frac{1-(-5)}{2} = \frac{6}{2} = 3$

V. Shift $d = 1 - 3 = -2$

Period $\frac{13\pi}{2} - \frac{5\pi}{2} = \frac{8\pi}{2} = 4\pi$

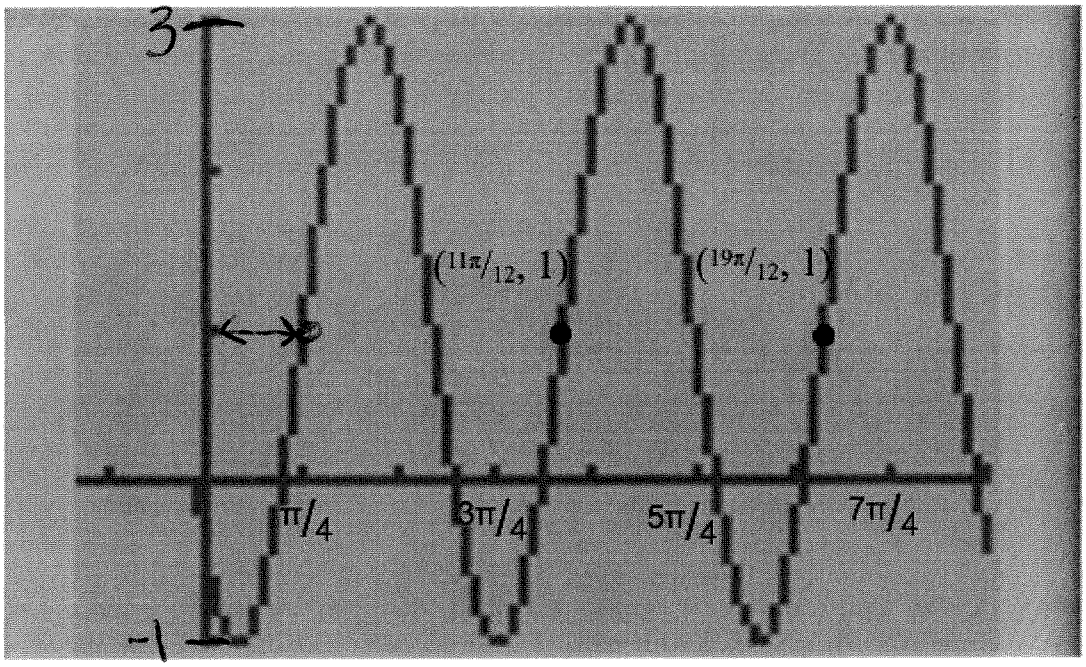
$4\pi = \frac{2\pi}{b}$

$b = \frac{2\pi}{4\pi} = \frac{1}{2}$

H. Shift = left $\frac{\pi}{2}$ or right $\frac{7\pi}{2}$ or $= c$

$$y = 3\sin\left(\tfrac{1}{2}\left(x + \tfrac{\pi}{2}\right)\right) - 2$$

**B.** (**No calculator**) Find an equation of the form $y = A\sin\big(b(x-c)\big) + d$ for the function represented on the graph below. The maximum and minimum $y$-values on the curve are 3 and -1, respectively.




amplitude: $a = \frac{3-(-1)}{2} = \frac{4}{2} = 2$

V. Shift: $d = 3 - 2 = 1$

Period $= \frac{19\pi}{12} - \frac{11\pi}{12} = \frac{8\pi}{12} = \frac{2\pi}{3}$

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

H. Shift: $\rightarrow \frac{\pi}{4}$ or $\leftarrow \frac{\pi}{4}$

$y = 2\sin 3\left(x - \frac{\pi}{4}\right) + 1$