#4 SIN & COS GRAPHS – 3 TRANSFORMATIONS PRACTICE

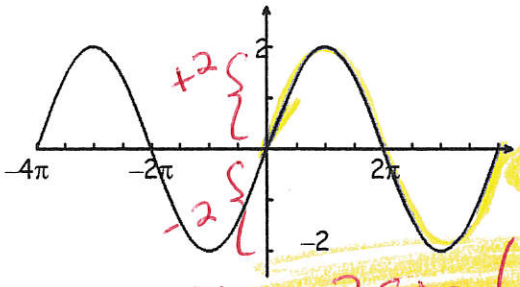
Key

Name: _____

Identify the amplitude and period of each function graphed below. Then write an equation of each graph. Check your answers by graphing your equation in your calculator.

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

1.

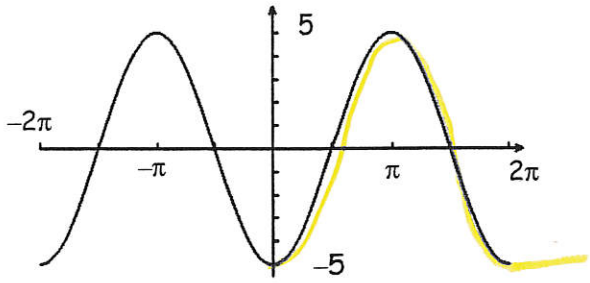


$a = 2$

pos sin

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

2.



Neg cos

$|a| = 5$

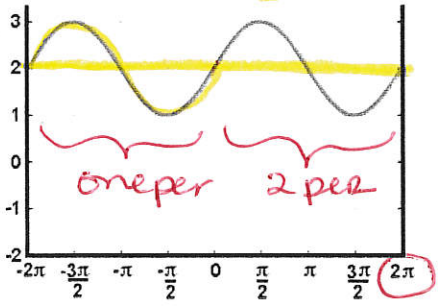
$a = -5$

per = 2π

So $b = 1$

$y = -5\cos x$

3.



2 per = 4π

per = 2π

$d = 2$ $y = \sin(1x) + 2$

$a = 1$

pos sin

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

So $b = 1$ $b = 1$

Determine the amplitude, period, increment, and mid-line for each. Then graph!

4. $y = 2\cos(3x) - 1$ GRAPH IT!

a = 2

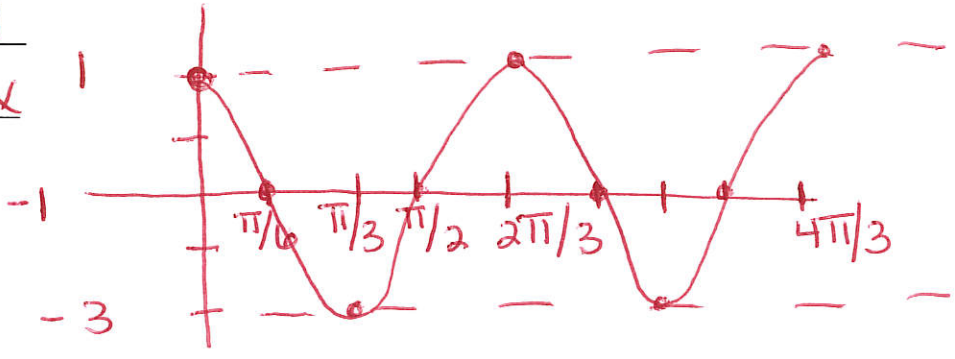
b = 3

Period = per = $\frac{2\pi}{b} = \frac{2\pi}{3}$

Increment = per ÷ 4 $\frac{2\pi}{3} \div 4 = \frac{2\pi}{12} = \frac{\pi}{6}$

VS = -1, so midline is y = -1

Positive Cosine starts at the max



5. $y = \frac{1}{2}\cos 2x - 4$

a = $\frac{1}{2}$

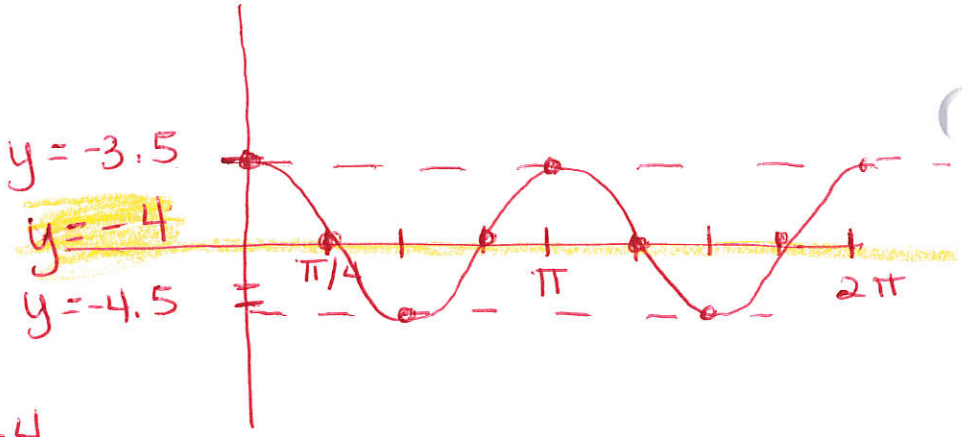
b = 2

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

Increment = $\pi/4$

VS = ↓4, so midline is y = −4

Positive Cosine starts at the max



6. $y = 3 + 4\sin\left(\frac{1}{4}x\right)$

a = 4

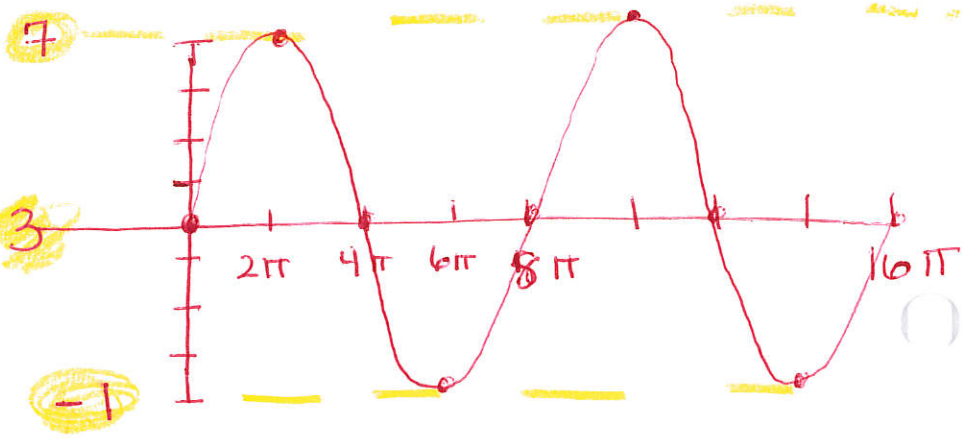
b = $\frac{1}{4}$

Period = $2\pi \div \frac{1}{4} = 8\pi$

Increment = 2π

VS = ↑3, so midline is y = 3

Positive Sine starts at the mid, goes ↑



$y = -\frac{1}{2}\cos\frac{1}{3}x + 3$

a = $-\frac{1}{2}$

b = $\frac{1}{3}$

Period = 6π

Increment = $3\pi/2$

VS = ↑3, so midline is y = 3

Negative Cosine starts at the min line