Quiz 2.1- 2.3 Review Solutions

1. Name the effects of changing the value of A, B, C, and D on the graph of $y = C + A\sin B(x - D)$

A: changes Amplitude
B: changes period
per = $360/B$ or $2\pi/B$ critical points: $\frac{per}{4}$
C: changes sinusoidal axis (moves up/down)
D: phase shift (changes starting x-value)

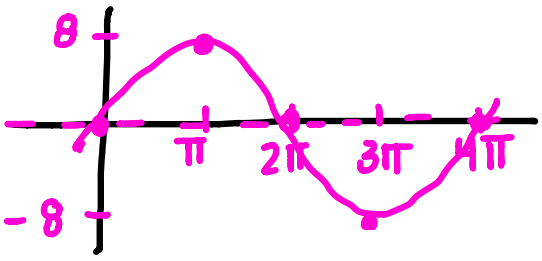
2. Fill in the table for the following trig functions:

	Period $(\frac{2\pi}{B})$	Amplitude A	Phase Shift D	Vertical Shift C	Range
$f(x) = -\cos\frac{1}{8}(x-\pi)+2$ ↑reflects A=1 B=$\frac{1}{8}$ C=2 D=π	$2\pi \div \frac{1}{8}$ 16π	1	π	+2	[1, 3]
$f(x) = 2-3\sin\frac{\pi}{4}x$ ↑reflects A=3 B=$\frac{\pi}{4}$ C=2 D=0	$2\pi \div \frac{\pi}{4} = 2\pi \cdot \frac{4}{\pi}$ 8	3	0	+2	[-1, 5]

3. Graph one cycle of the following equations in radians.

a. $y = 8\sin\frac{1}{2}x$

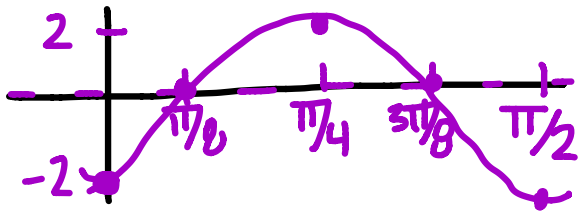
Amp: 8
C=0
Per: $\frac{2\pi}{\frac{1}{2}} = 4\pi$
CP: $4\pi/4 = \pi$



b. $y = -2\cos 4\theta$

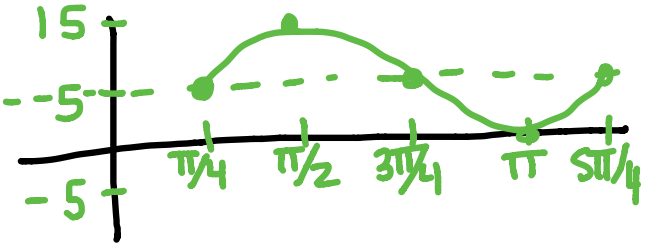
↑reflects! starts @ low instead of high

Amp: 2
Per: $\frac{2\pi}{4} = \frac{\pi}{2}$ CP: $\frac{\pi}{8}$



c. $y = 5 + 10\sin\left(2x - \frac{\pi}{2}\right)$ $2(x - \frac{\pi}{4})$

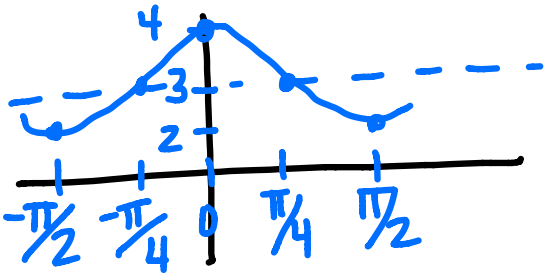
Amp: 10
VS: 5
per: $\frac{2\pi}{2} = \pi$ PS: $\frac{\pi}{4}$
CP: $\frac{\pi}{4}$



d. $y = -\cos 2\left(x + \frac{\pi}{2}\right) + 3$

↑reflects

Amp: 1
VS: 3
PS: $-\frac{\pi}{2}$
per: $\frac{2\pi}{2} = \pi$ CP: $\frac{\pi}{4}$



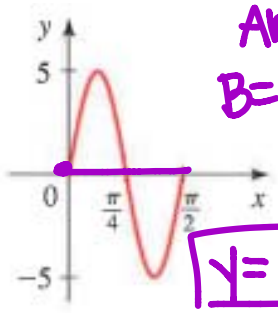
4. How are the graphs of sine and cosine related?

The graph of cosine is the graph of sine with a phase shift of $\frac{\pi}{2}$.

5. Write the equations of #37 and #38 as sine functions and #39 and #40 as cosine functions.

Remember: there are lots of possible answers for these!

37.



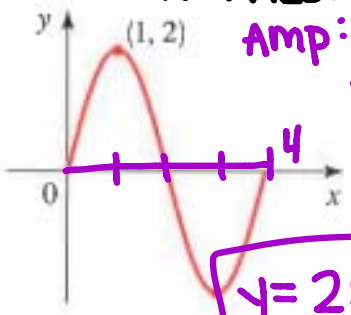
Amp: 5 C=0

$B = \frac{2\pi}{per.} = \frac{2\pi}{\frac{\pi}{2}} = 4$

D = 0 or $\frac{\pi}{2}$

$y = 5\sin 4x$

38.



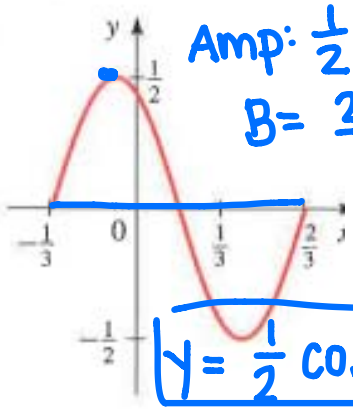
Amp: 2 C=0

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

D = 0 or 4

$y = 2\sin\frac{\pi}{2}(x-4)$

39.



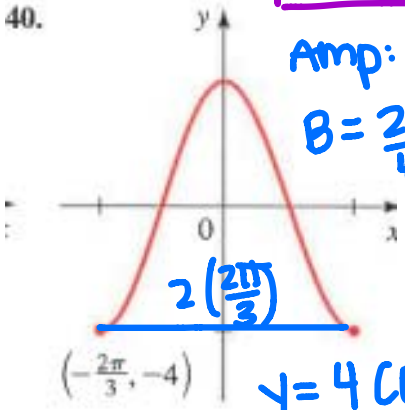
Amp: $\frac{1}{2}$ C=0

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

$D \approx \frac{-1}{9}$

$y = \frac{1}{2}\cos 2\pi\left(x+\frac{1}{9}\right)$

40.



Amp: 4 C=0

$B = \frac{2\pi}{4\pi/3} = \frac{3}{2}$

D: 0

$y = 4\cos\frac{3}{2}(x)$

Try to write #37 & 38 as cosine and #39 & 40 as sine for extra practice

Be able to graph sine and cosine graphs with amplitude & period changes and vertical & phase shifts. Make sure you read directions (i.e. whether to write the equation as a sine or cosine function).

Good Luck!

Rewatch 2.1, 2.2, 2.3 and go over class work!