8.1 B- Pt.2 sol

Trigonometry

Name _____
Date _____

Graphing Sine and Cosine
Practice Worksheet

Graph the following functions over two periods, one in the positive direction and one in the negative direction. Label the axes appropriately.

1. $y = -3\cos x$ Amplitude: 3 Period: 2π

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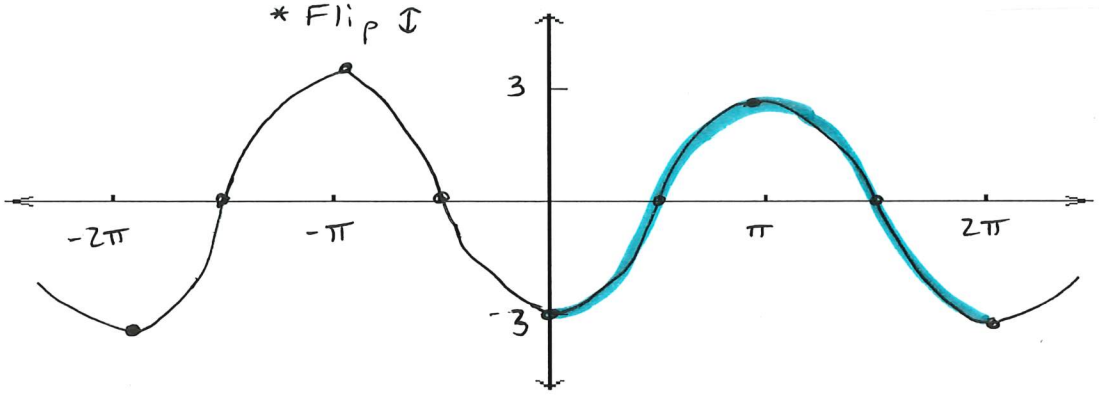
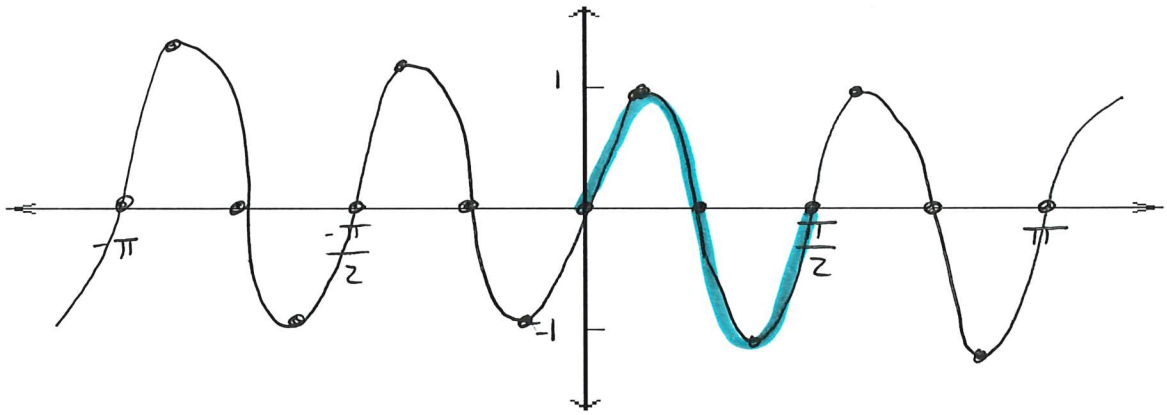
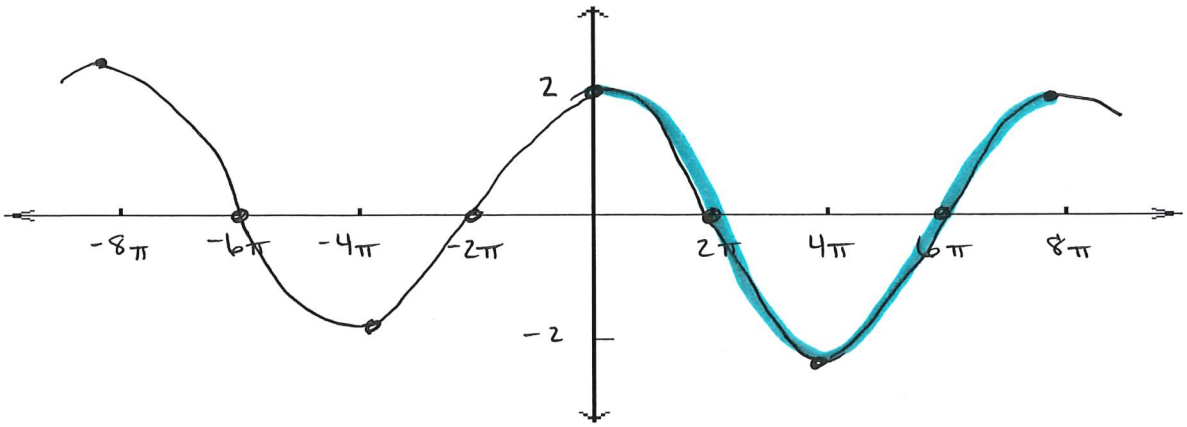


2. $y = \sin(4x)$ Amplitude: 1 Period: $\frac{\pi}{2}$ $\frac{2\pi}{4} = \frac{\pi}{2}$

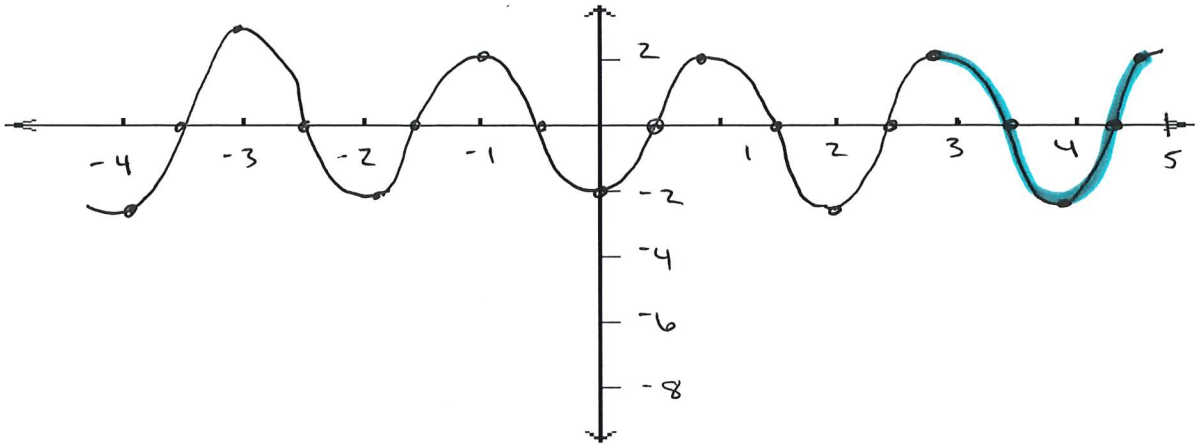


3. $y = 2\cos\left(\frac{1}{4}x\right)$ Amplitude: 2 Period: 8π $\frac{2\pi}{\left(\frac{1}{4}\right)} \cdot 4 = 8\pi$



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

4. $y = 2\cos(\pi x - 3\pi)$ Amplitude: 2 Period: 2 Shift: right 3 $\frac{3\pi}{\pi} = 3$



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

5. $y = 1 - 3\sin(2x)$ Amplitude: 3 Period: π Shift: ↑ 1

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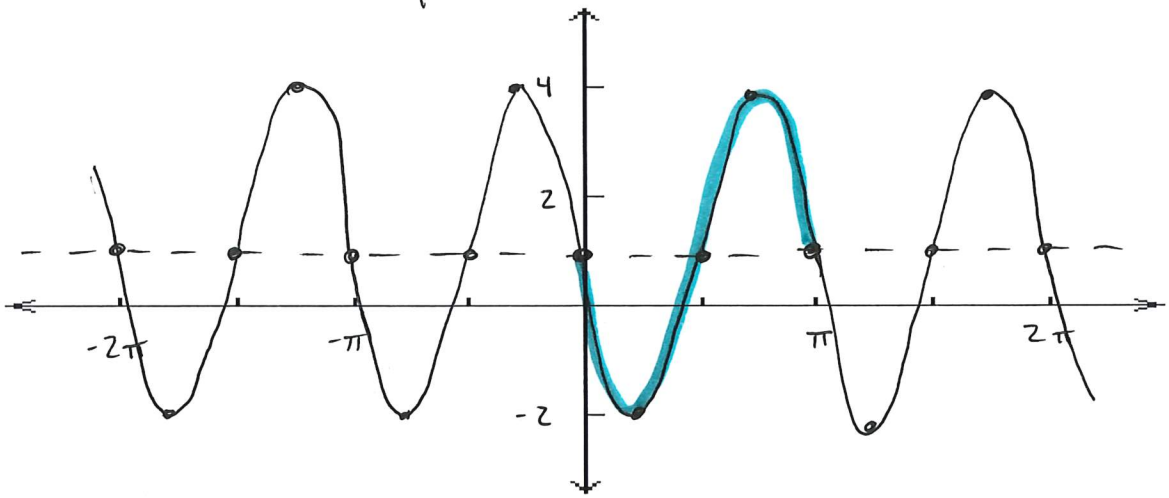
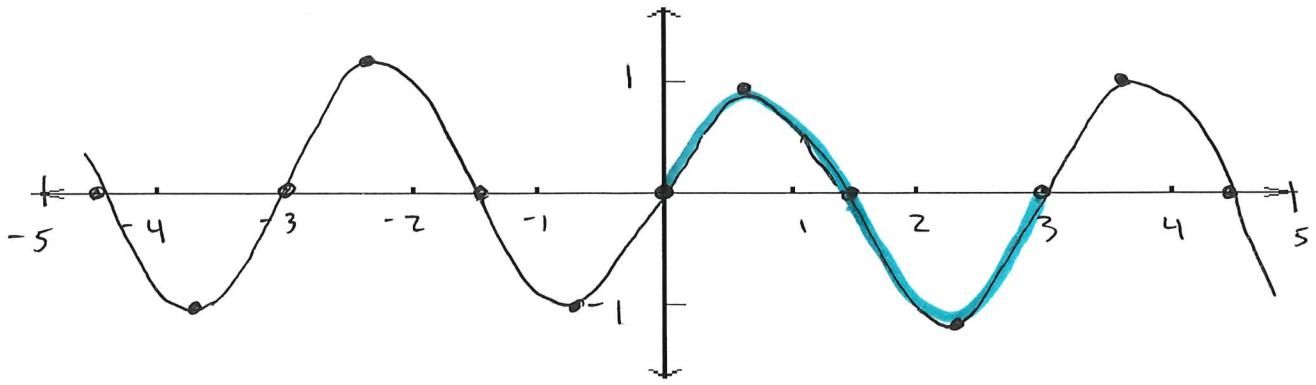
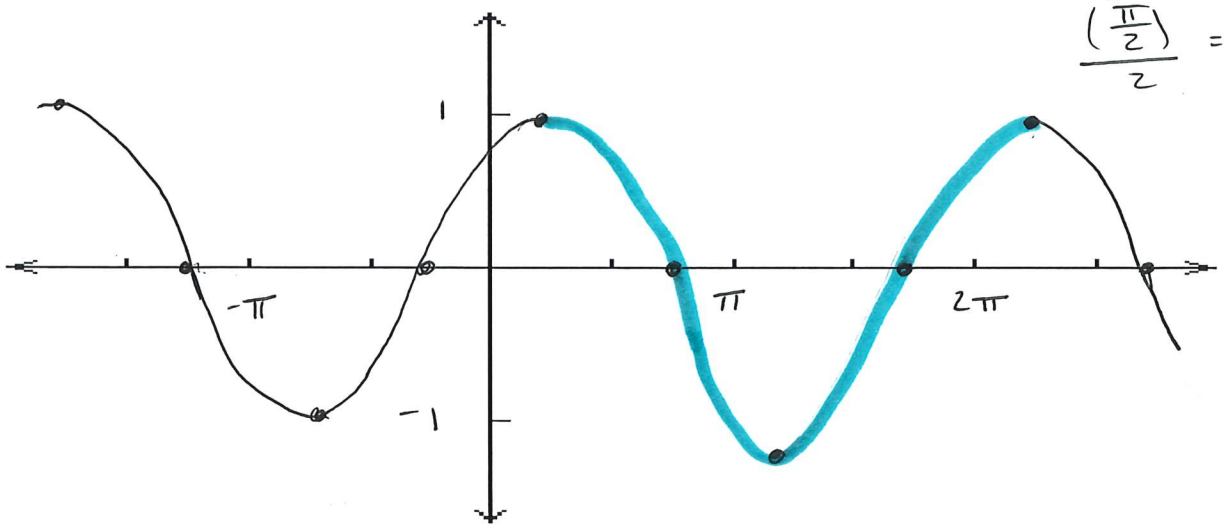


6. $y = \sin\left(\frac{2\pi}{3}x\right)$ Amplitude: 1 Period: 3 $\frac{2\pi \cdot 3}{(\frac{2\pi}{3}) \cdot 3} = \frac{6\pi}{2\pi} = 3$



7. $y = \cos\left(2x - \frac{\pi}{2}\right)$ Amplitude: 1 Period: π $\frac{2\pi}{2} = \pi$ Shift: Right $\frac{\pi}{4}$

$\frac{\left(\frac{\pi}{2}\right)}{2} = \frac{\pi}{2} \cdot \frac{1}{2} = \frac{\pi}{4}$



Write the equation of a cosine function of the form $y = A\cos(Bx - C) + D$ that has the given characteristics.

9. Amplitude: 2 $A = 2$

Period: $\frac{\pi}{3}$ $\frac{\pi}{3} = \frac{2\pi}{B}$ $\frac{B}{3} = 2$ $B = 6$

Shift: Down 1 unit $D = -1$ $C = 0$

$y = 2\cos(6x) - 1$

10. Amplitude: 4 $A = 4$

Period: 3 $3 = \frac{2\pi}{B}$ $3B = 2\pi$ $B = \frac{2\pi}{3}$

Shift 1: $\frac{\pi}{8}$ to the right $\left(\frac{2\pi}{3}\right) \cdot \frac{\pi}{8} = \frac{C}{\left(\frac{2\pi}{3}\right)} \cdot \left(\frac{2\pi}{3}\right)$ $C = \frac{\pi^2}{12}$

Shift 2: up 2 units $D = 2$

$y = 4\cos\left(\frac{2\pi}{3}x - \frac{\pi^2}{12}\right) + 2$