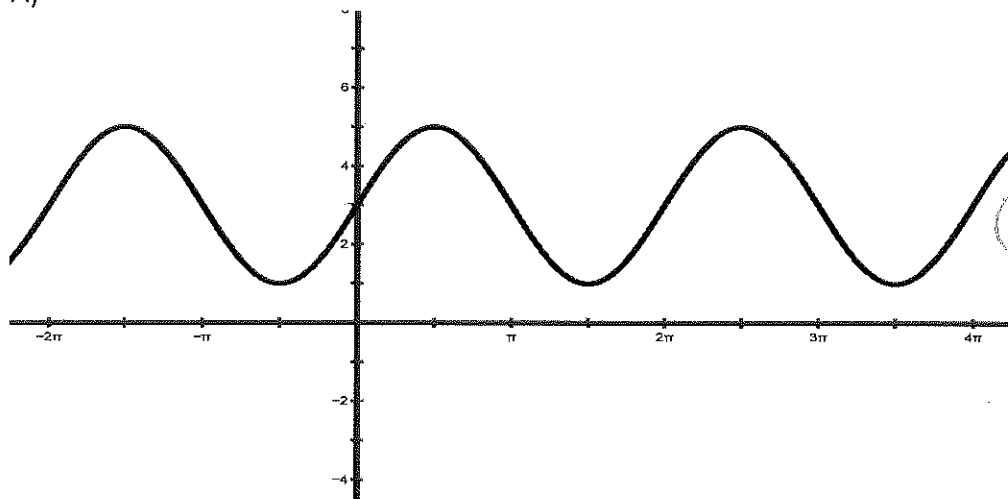


Sections 4.5 – Graphs of Sine & Cosine Functions (Day 4)

Homework for 4.5 day 4

1. Write the equation that represents the following sinusoid graphs:

A)



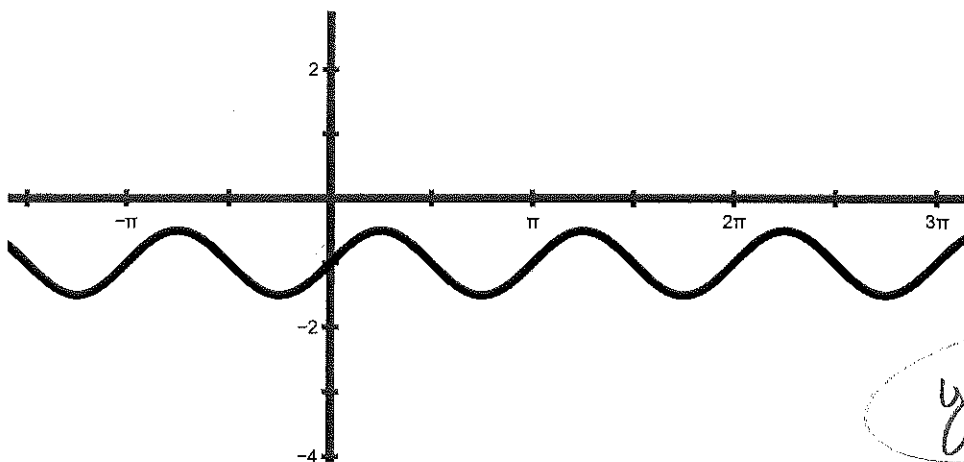
new center = 3
 $P = 2\pi \Rightarrow B = 1$
 $a = 2$

$y = 2\sin x + 3$

or

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

B)



new center = -1
 $a = \frac{1}{2}$
 $P = \pi = \frac{2\pi}{B}$
 $\Rightarrow B = 2$

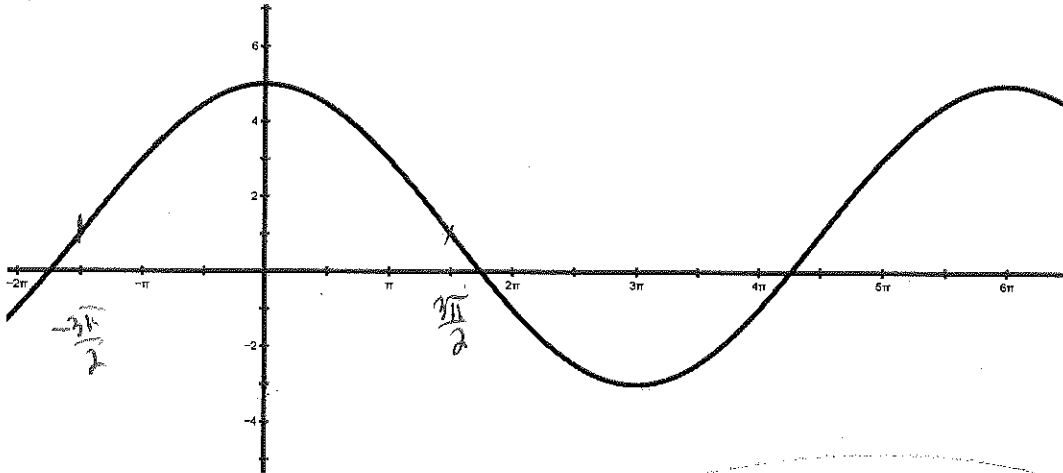
$y = \frac{1}{2}\sin 2x - 1$

or

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

Sections 4.5 – Graphs of Sine & Cosine Functions (Day 4)

C)



new center = 1

$$a = 4$$

$$P = 6\pi = \frac{2\pi}{B}$$

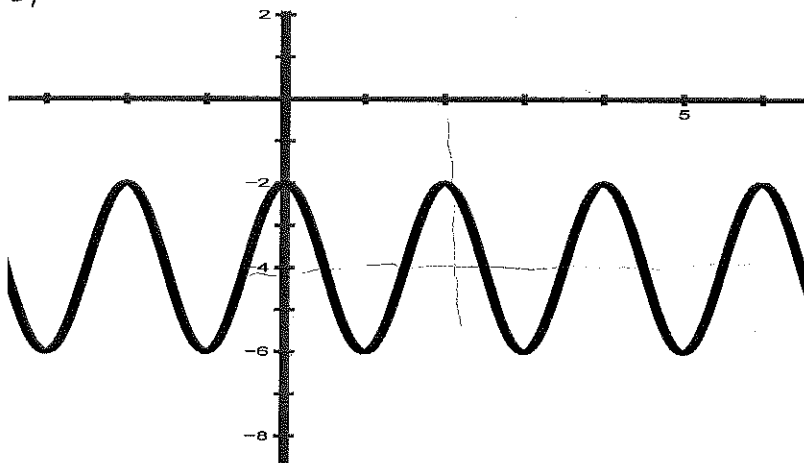
$$\Rightarrow B = 1/3$$

$$y = 4 \cos \frac{x}{3} + 1$$

or

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

D)



new center = -4

$$a = 2$$

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

$$\Rightarrow B = \pi$$

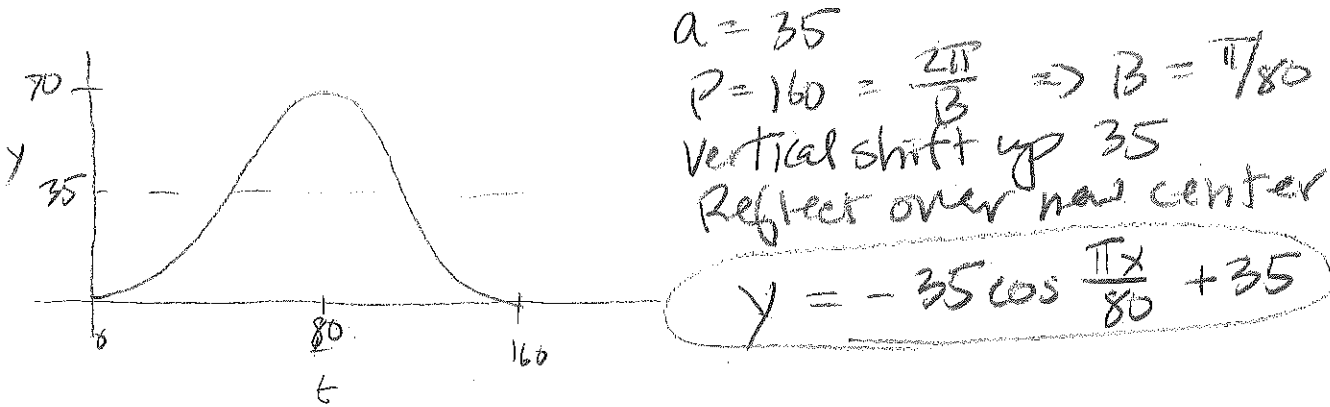
$$y = 2 \cos \pi x - 4$$

or

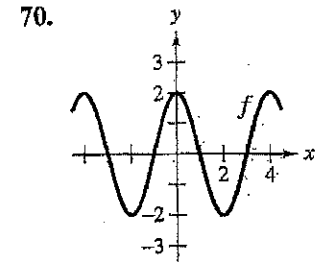
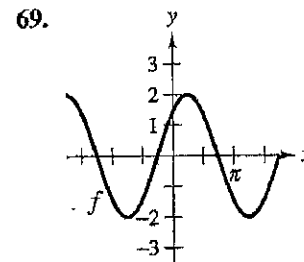
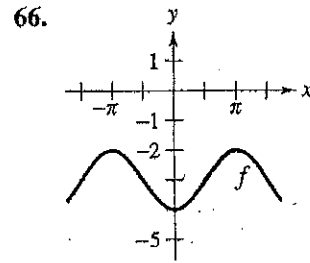
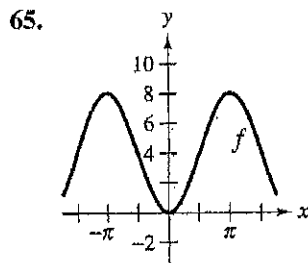
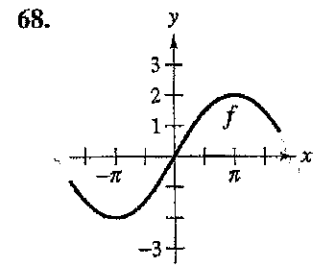
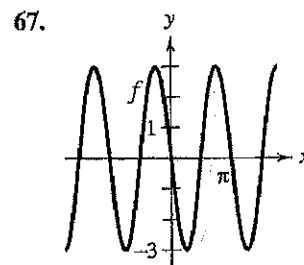
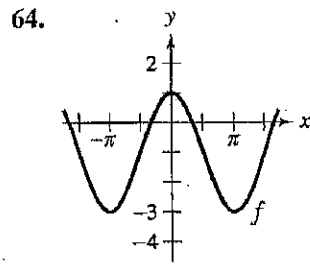
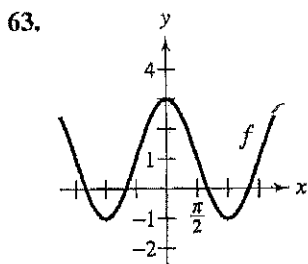
$$y = 2 \sin \left(\pi x - \frac{1}{2} \right) - 4$$

Sections 4.5 – Graphs of Sine & Cosine Functions (Day 4)

2. Sketch the graph and write the sinusoidal model that represents the height of a rider above the ground y in terms of the time, t , if the rider gets on the ride at time 0 with a height of 0 feet, and then reaches the maximum height of 70 feet for the 1st time 80 seconds later



3. Write the equations for #63-70 from page 329 in your textbook (here is a scan of them)



63) $y = 2 \cos(x + 1)$

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

67) $y = -3 \sin(2x)$

68) $y = 2 \sin \frac{x}{2}$

65) $y = -4 \cos(x) + 4$

66) $y = -\cos(x) - 3$

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

70) $y = 2 \cos \frac{\pi x}{2}$
or

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