

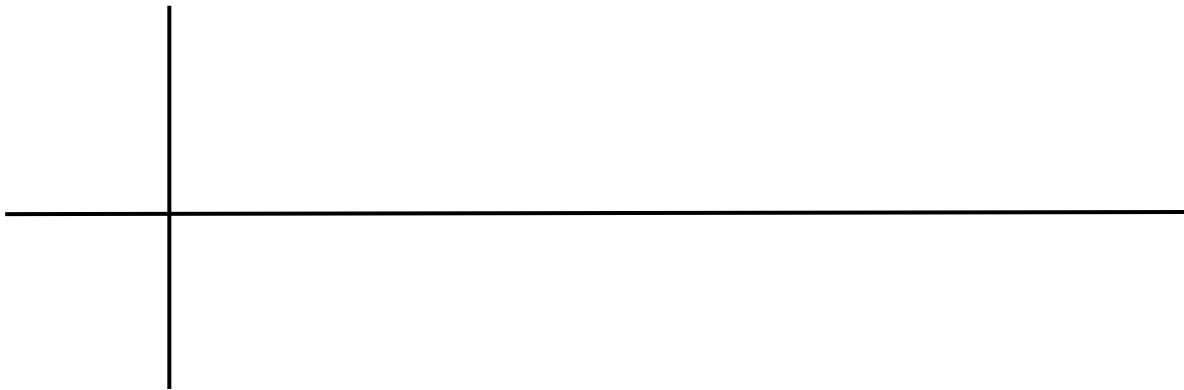
1. Graph $y = \sin\left(x + \frac{\pi}{2}\right)$ What is the period and the amplitude?
2. Graph $y = 3\sin\left(x + \frac{\pi}{2}\right)$ What is the period and the amplitude?
3. Graph $y = 3\sin\left(2x + \frac{\pi}{2}\right)$ What is the period and the amplitude?
4. Graph $y = 3\sin\left(2x + \frac{\pi}{2}\right) + 2$ What is the period and the amplitude?
5. Graph $y = \sin(2x) + 2\cos(x)$ What is the period and the amplitude?

6. The velocity v (m/hr) of a particle at time t (hr) is given by the function

$$v(t) = 150 \cos\left(\frac{\pi t}{100}\right), 0 \leq t \leq 300. \text{ Use this function to answer the questions below.}$$

a. The period of this function is _____

b. Sketch the graph of this function for $0 \leq t \leq 300$. On the x-axis, label all x-intercepts as well as locations of all maximums and minimums. Indicate along the y-axis the range (amplitude) of the function.



c. What is the particle's initial velocity? _____

d. The particle moves backwards when its velocity is negative. For what time interval(s) will the particle be moving backwards? _____

e. The particle is standing still when its velocity is zero. When is the particle standing still?

f. For what time interval(s) is the velocity increasing? _____

g. What is the particle's maximum velocity and at what times will it attain this velocity?

maximum velocity is _____ which occurs at $t =$ _____