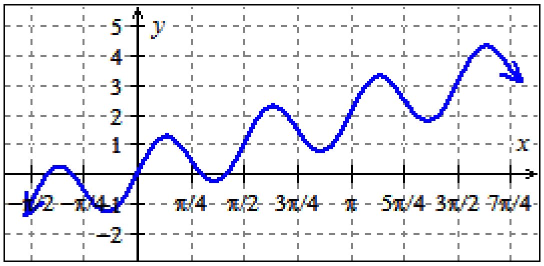
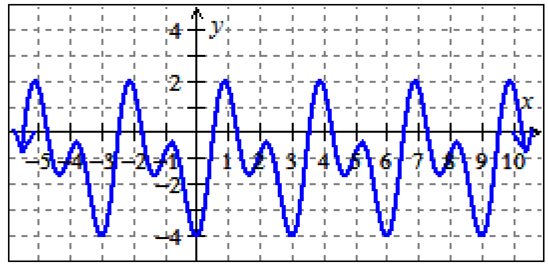
Extra Practice for Section I: Chapter 2

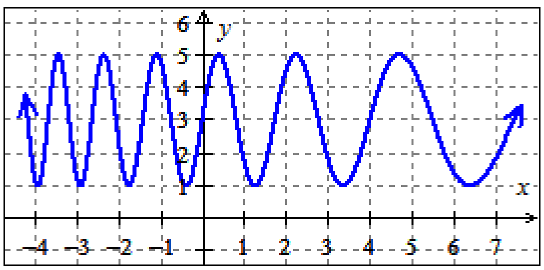
1. Determine which of the functions graphed below are periodic functions and find the period, midline, and amplitude of the periodic functions.



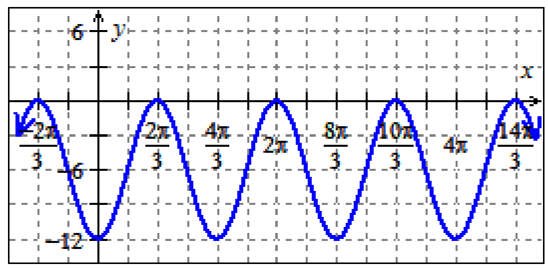
$y = A(x)$



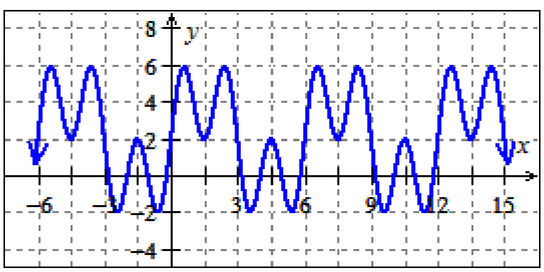
$y = B(x)$



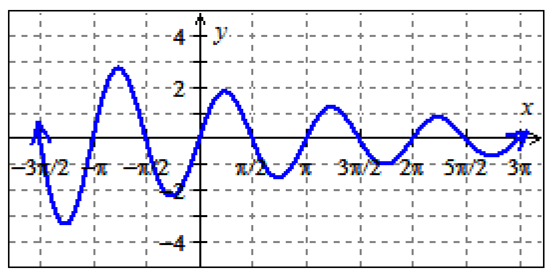
$y = C(x)$ is



$y = D(x)$



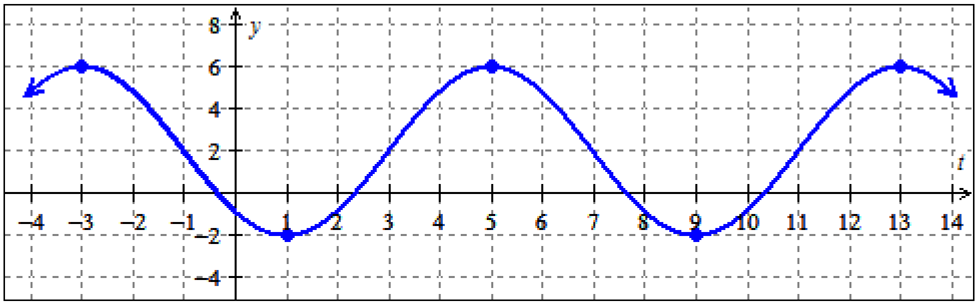
$y = E(x)$



$y = F(x)$

Click here to see the solution to **1.**

2. Determine the period, midline and amplitude of the function $y = f(t)$ graphed below. Note that the following points are on the graph: $(-3, 6)$, $(1, -2)$, $(5, 6)$, $(9, -2)$, and $(13, 6)$.

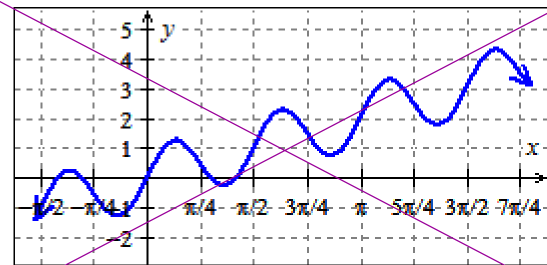


The graph of $y = f(t)$.

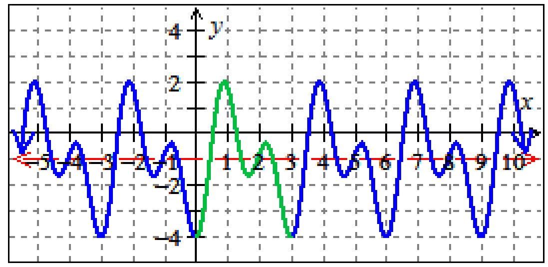
Click here to see the solution to **2.**

Solution to **1.**

1. Determine which of the functions graphed below are periodic functions and find the period, midline, and amplitude of the periodic functions.



$y = A(x)$ isn't periodic.

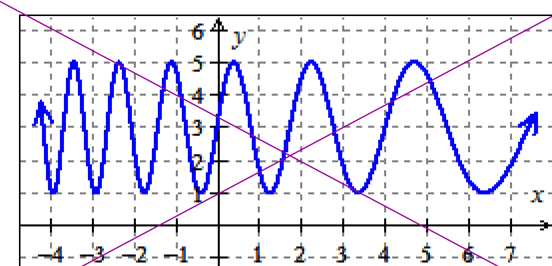


$y = B(x)$ is periodic.

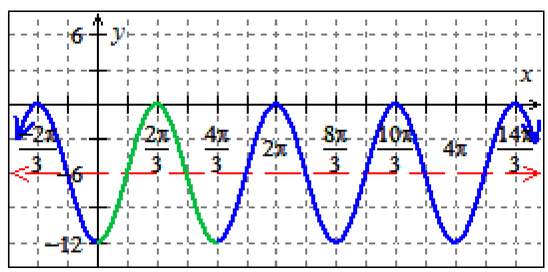
The **period** of $y = B(x)$ is 3 units. In the graph above, we've colored one period green.

The **midline** of $y = B(x)$ is $y = -1$. In the graph above, we've colored the midline red.

The **amplitude** of $y = B(x)$ is 3 units. This is half of the distance between the maximum y-value ($y = 2$) and the minimum y-value ($y = -4$).



$y = C(x)$ isn't periodic.

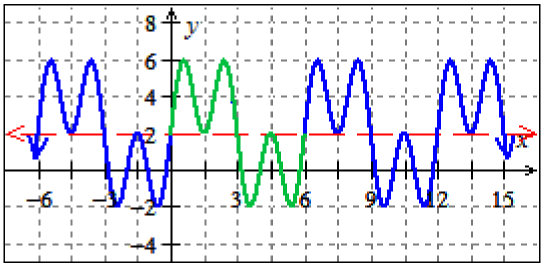


$y = D(x)$ is periodic.

The **period** of $y = D(x)$ is $\frac{4\pi}{3}$ units. In the graph above, we've colored one period green.

The **midline** of $y = D(x)$ is $y = -6$. In the graph above, we've colored the midline red.

The **amplitude** of $y = D(x)$ is 6 units. This is half of the distance between the maximum y-value ($y = 0$) and the minimum y-value ($y = -12$).

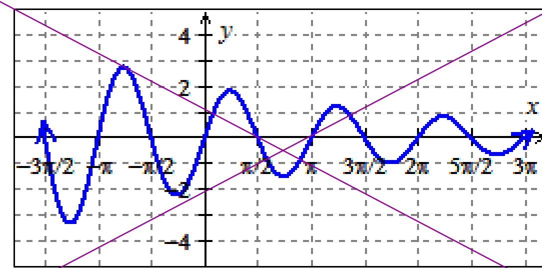


$y = E(x)$ is periodic.

The **period** of $y = E(x)$ is 6 units. In the graph above, we've colored one period green.

The **midline** of $y = E(x)$ is $y = 2$. In the graph above, we've colored the midline red.

The **amplitude** of $y = E(x)$ is 4 units. This is half of the distance between the maximum y-value ($y = 6$) and the minimum y-value ($y = -2$).



$y = F(x)$ isn't periodic.

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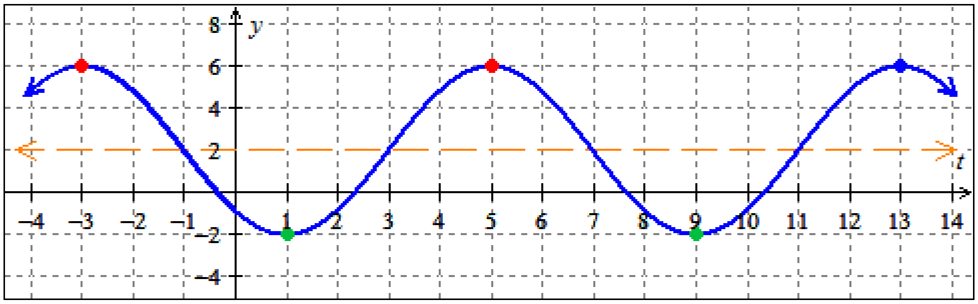
Solution to **2.**

2. Determine the period, midline and amplitude of the function $y = f(t)$ graphed below. Note that the following points are on the graph: $(-3, 6)$, $(1, -2)$, $(5, 6)$, $(9, -2)$, and $(13, 6)$.



The graph of $y = f(t)$.

The **period** of the function graphed above is 8 units. There are a few ways to compute this. For example, we can compare the x-values for the ordered pairs $(\mathbf{-3}, 6)$ and $(\mathbf{5}, 6)$ (colored red in the graph above) or the x-values for the ordered pairs $(\mathbf{1}, -2)$ and $(\mathbf{9}, -2)$ (colored green in the graph above):

$$5 - (-3) = 8$$

and

$$9 - 1 = 8.$$

The **midline** of the graphed function is $y = 2$. There are a few ways to compute this. For example, we can find the average of the y-values for the ordered pairs $(-3, \mathbf{6})$ and $(1, \mathbf{-2})$ (colored red and green in the graph above) since the function reaches, respectively, maximum and minimum values at these points:

$$y = \frac{6 + (-2)}{2} = 2.$$

The **amplitude** of the graphed function is 4 units. There are a few ways to compute this. For example, we can determine the distance between the midline, $y = \mathbf{2}$, and the y-value of the ordered pair $(-3, \mathbf{6})$ where the function reaches its maximum:

$$6 - 2 = 4.$$

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