

Practice Problems

Graph each of the following functions on the interval given.

1. $y = -\frac{1}{2} \cos 2x + 1$ on $[-2\pi, 2\pi]$

2. $y = -3 \sin \left(2x - \frac{\pi}{2} \right) + 2$ on $[-2\pi, 2\pi]$

3. $y = 2 \cos \left(\frac{x}{2} - \frac{\pi}{4} \right) + 2$ on $[-6\pi, 6\pi]$

4. $y = 4 \cos 3x$ on $[-2\pi, 2\pi]$

5. $y = \frac{1}{2} \cos \left(2x - \frac{\pi}{2} \right)$ on $[-2\pi, 2\pi]$

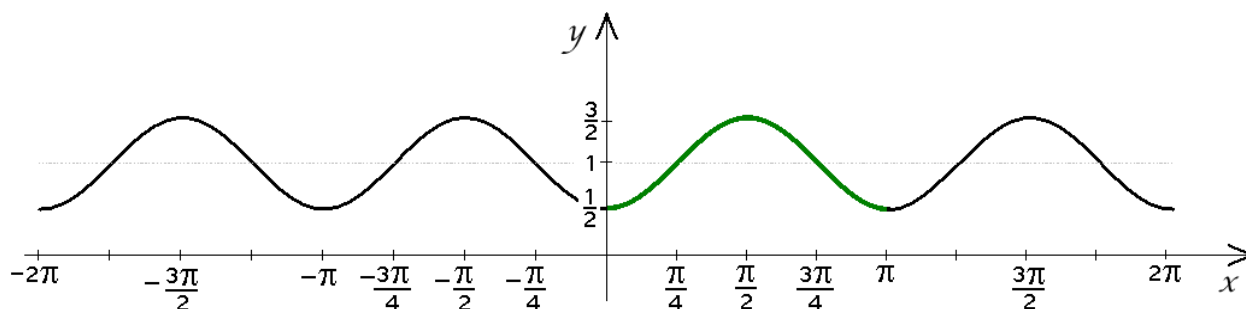
6. $y = \frac{1}{2} \sin \left(\pi x - \frac{\pi}{2} \right) + 2$ on $[-3, 3]$

Answers

Graph each of the following functions on the interval given.

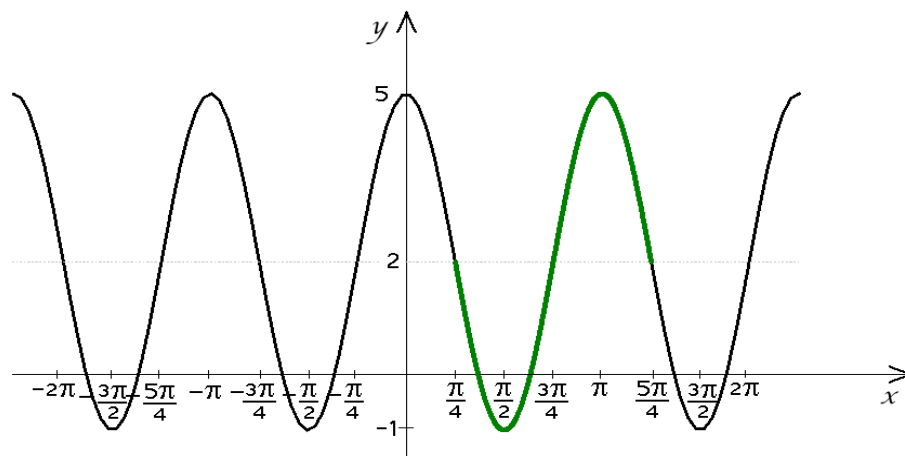
1. $y = -\frac{1}{2} \cos 2x + 1$ on $[-2\pi, 2\pi]$

x	$2x$	$\cos 2x$	$-\frac{1}{2} \cos 2x$	$-\frac{1}{2} \cos 2x + 1$
0	0	1	$-\frac{1}{2}$	$\frac{1}{2}$
$\frac{\pi}{4}$	$\frac{\pi}{2}$	0	0	1
$\frac{\pi}{2}$	π	-1	$\frac{1}{2}$	$\frac{3}{2}$
$\frac{3\pi}{4}$	$\frac{3\pi}{2}$	0	0	1
π	2π	1	$-\frac{1}{2}$	$\frac{1}{2}$



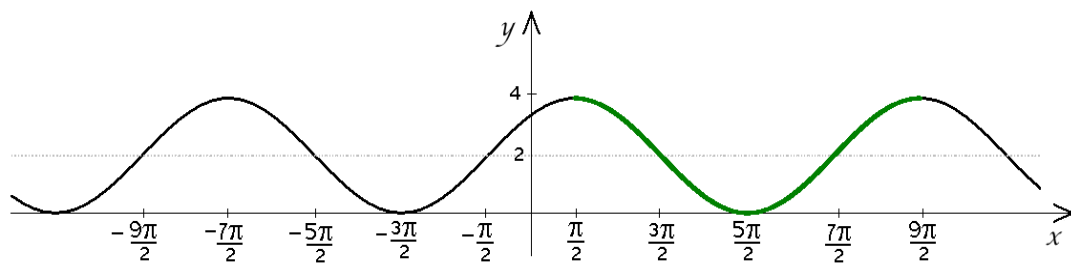
2. $y = -3 \sin \left(2x - \frac{\pi}{2} \right) + 2$ on $[-2\pi, 2\pi]$

x	$2x - \frac{\pi}{2}$	$\sin \left(2x - \frac{\pi}{2} \right)$	$-3 \sin \left(2x - \frac{\pi}{2} \right)$	$-3 \sin \left(2x - \frac{\pi}{2} \right) + 2$
$\frac{\pi}{4}$	0	0	0	2
$\frac{\pi}{2}$	$\frac{\pi}{2}$	1	-3	-1
$\frac{3\pi}{4}$	π	0	0	2
π	$\frac{3\pi}{2}$	-1	3	5
$\frac{5\pi}{4}$	2π	0	0	2



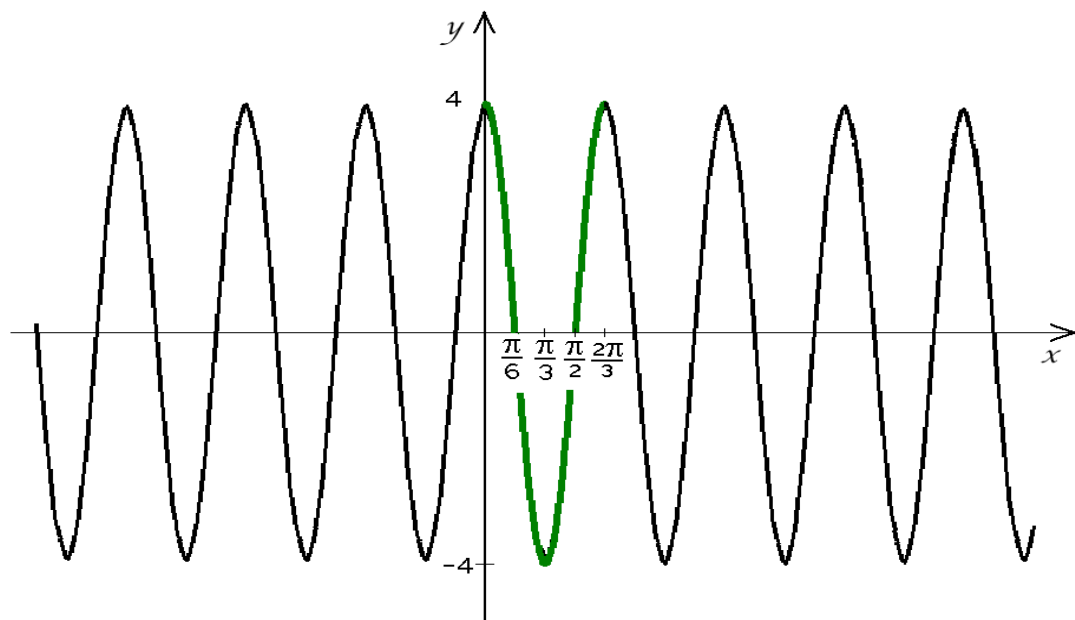
3. $y = 2 \cos \left(\frac{x}{2} - \frac{\pi}{4} \right) + 2$ on $[-6\pi, 6\pi]$

x	$\frac{x}{2} - \frac{\pi}{4}$	$\cos \left(\frac{x}{2} - \frac{\pi}{4} \right)$	$2 \cos \left(2x - \frac{\pi}{2} \right)$	$2 \cos \left(2x - \frac{\pi}{2} \right) + 2$
$\frac{\pi}{2}$	0	1	2	4
$\frac{3\pi}{2}$	$\frac{\pi}{2}$	0	0	2
$\frac{5\pi}{2}$	π	-1	-2	0
$\frac{7\pi}{2}$	$\frac{3\pi}{2}$	0	0	2
$\frac{9\pi}{2}$	2π	1	2	4



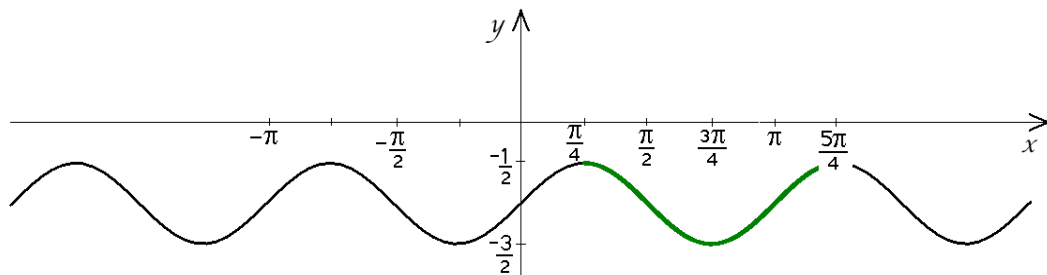
4. $y = 4 \cos 3x$ on $[-2\pi, 2\pi]$

x	$3x$	$\cos 3x$	$4 \cos 3x$
0	0	1	4
$\frac{\pi}{6}$	$\frac{\pi}{2}$	0	0
$\frac{\pi}{3}$	π	-1	-4
$\frac{\pi}{2}$	$\frac{3\pi}{2}$	0	0
$\frac{2\pi}{3}$	2π	1	4



5. $y = \frac{1}{2} \cos\left(2x - \frac{\pi}{2}\right) - 1$ on $[-2\pi, 2\pi]$

x	$2x - \frac{\pi}{2}$	$\cos\left(2x - \frac{\pi}{2}\right)$	$\frac{1}{2} \cos\left(2x - \frac{\pi}{2}\right)$	$\frac{1}{2} \cos\left(2x - \frac{\pi}{2}\right) - 1$
$\frac{\pi}{4}$	0	1	$\frac{1}{2}$	$-\frac{1}{2}$
$\frac{\pi}{2}$	$\frac{\pi}{2}$	0	0	-1
$\frac{3\pi}{4}$	π	-1	$-\frac{1}{2}$	$-\frac{3}{2}$
π	$\frac{3\pi}{2}$	0	0	-1
$\frac{5\pi}{4}$	2π	1	$\frac{1}{2}$	$-\frac{1}{2}$



6. $y = \frac{1}{2} \sin\left(\pi x - \frac{\pi}{2}\right) + 2$ on $[-3, 3]$

x	$\pi x - \frac{\pi}{2}$	$\sin\left(\pi x - \frac{\pi}{2}\right)$	$\frac{1}{2} \sin\left(\pi x - \frac{\pi}{2}\right)$	$\frac{1}{2} \sin\left(\pi x - \frac{\pi}{2}\right) + 2$
$\frac{1}{2}$	0	0	0	2
1	$\frac{\pi}{2}$	-1	$-\frac{1}{2}$	$\frac{3}{2}$
$\frac{3}{2}$	π	0	0	2
2	$\frac{3\pi}{2}$	1	$\frac{1}{2}$	$\frac{5}{2}$
$\frac{5}{2}$	2π	0	0	2

