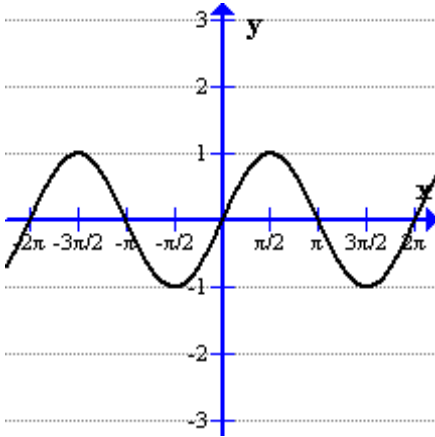


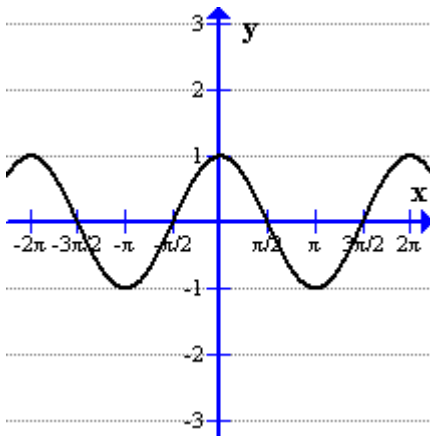
# Transformations of Sine and Cosine

Find two equations for each graph. Use SINE for the 1<sup>st</sup> equation, then use COSINE for the 2<sup>nd</sup> equation.



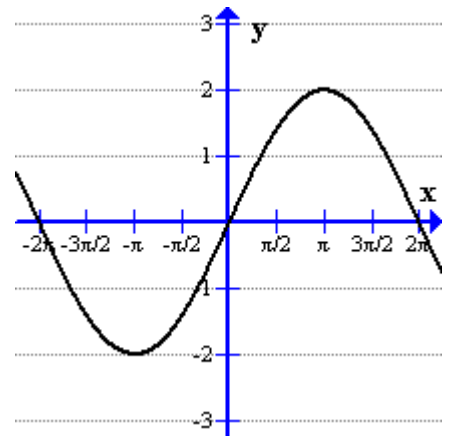
$$y = \sin x$$

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



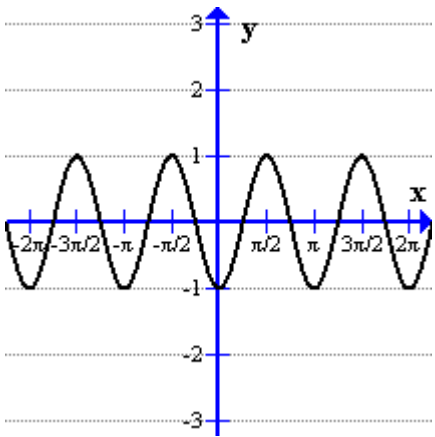
$$y = \sin(x + \frac{\pi}{2})$$

$$y = \cos x$$



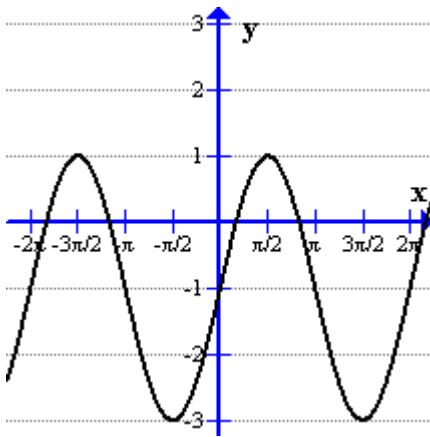
$$y = 2 \sin(\frac{1}{2} x)$$

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



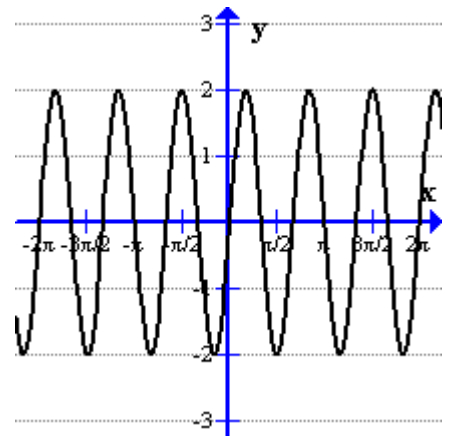
$$y = \sin(2(x - \frac{\pi}{4}))$$

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



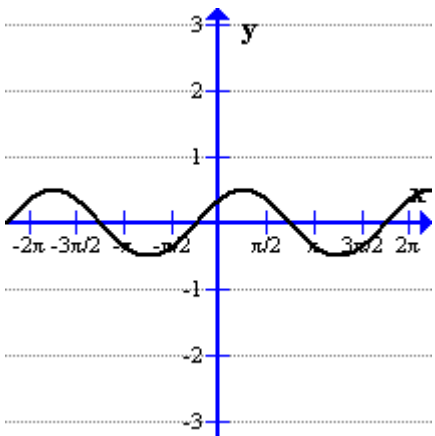
$$y = 2 \sin(x) - 1$$

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



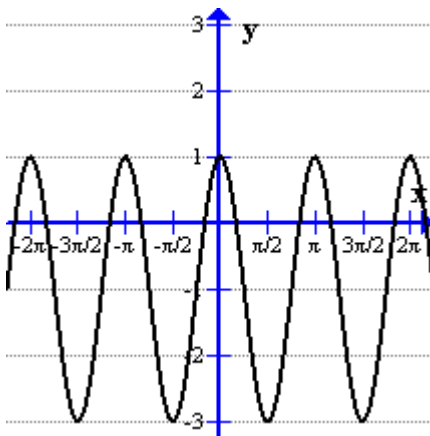
$$y = 2 \sin(3x)$$

$$y = 2 \cos(3(x - \frac{\pi}{6}))$$



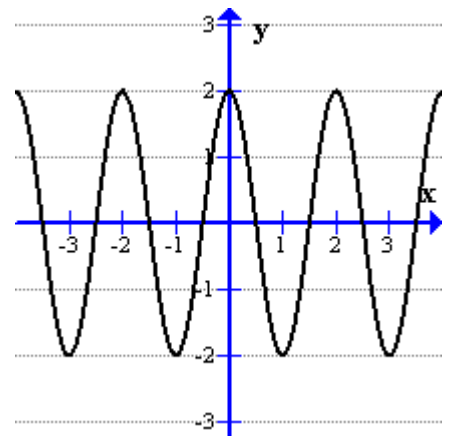
$$y = \frac{1}{2} \sin(x + \frac{\pi}{4})$$

$$y = \frac{1}{2} \cos(x - \frac{\pi}{4})$$



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

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



$$y = 2 \sin(\pi(x + \frac{1}{2}))$$

$$y = 2 \cos(\pi x)$$