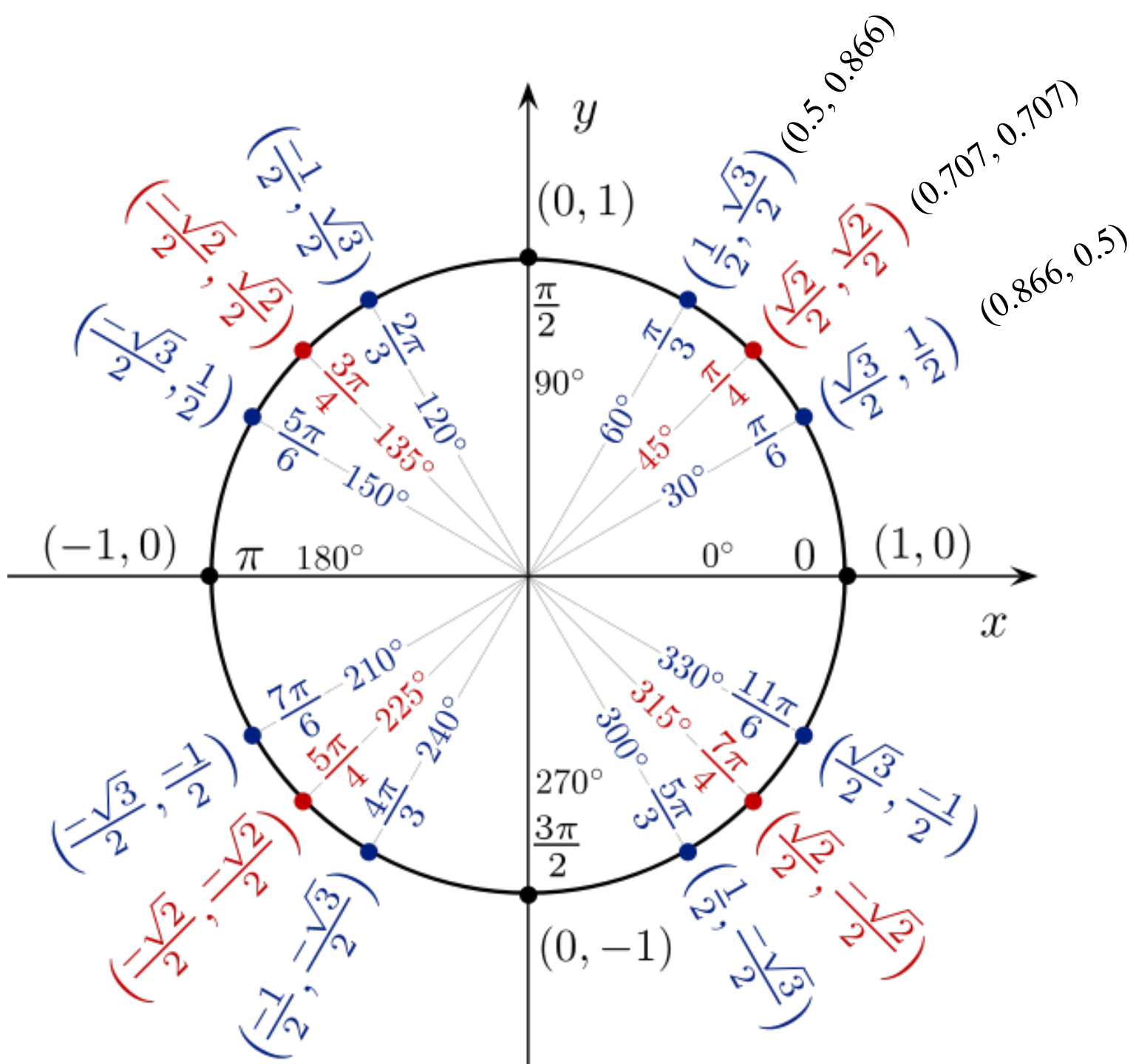


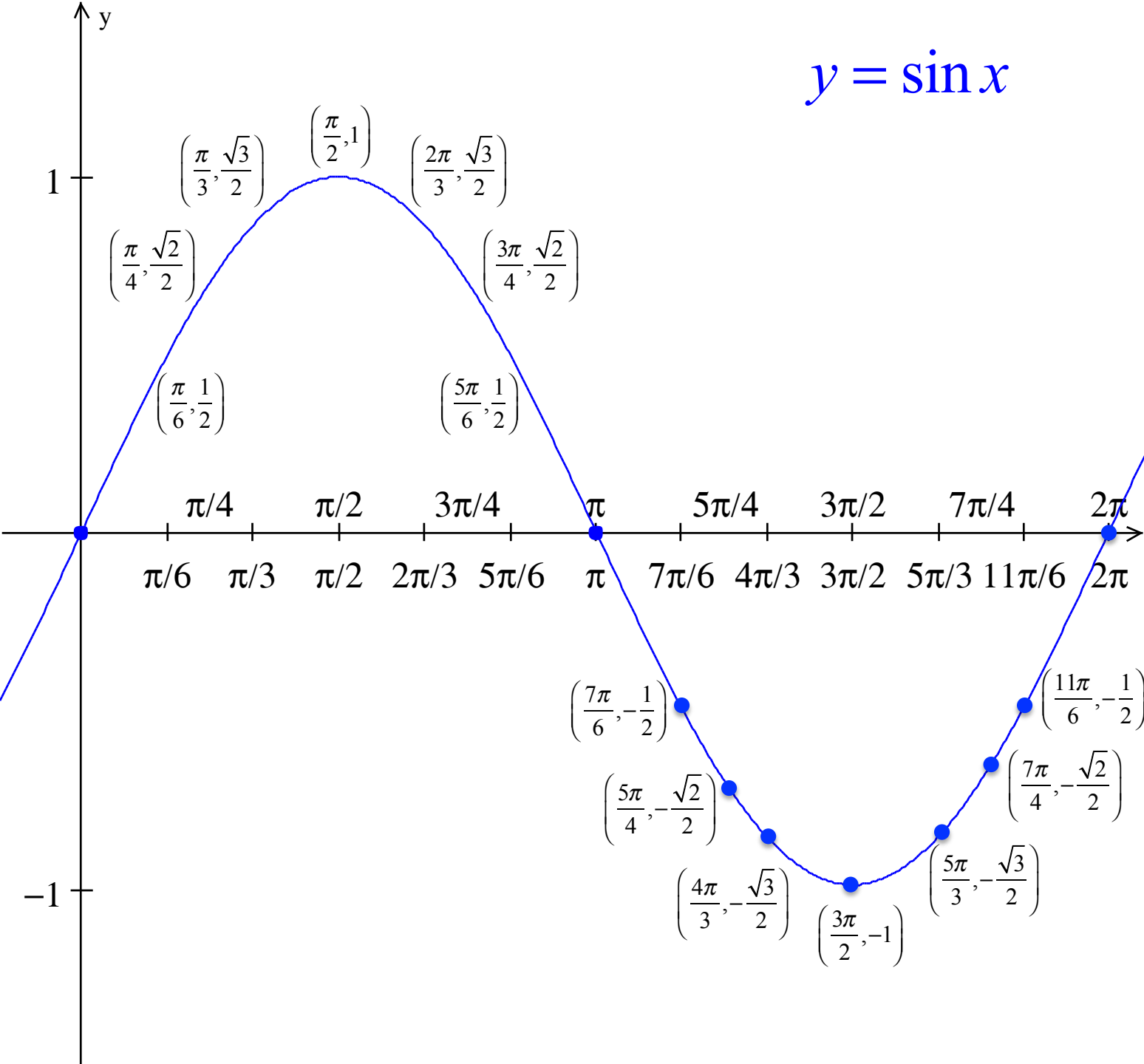
# Graphing Sine and Cosine



$$y = \sin x$$

$$\frac{\sqrt{2}}{2} \approx 0.707$$

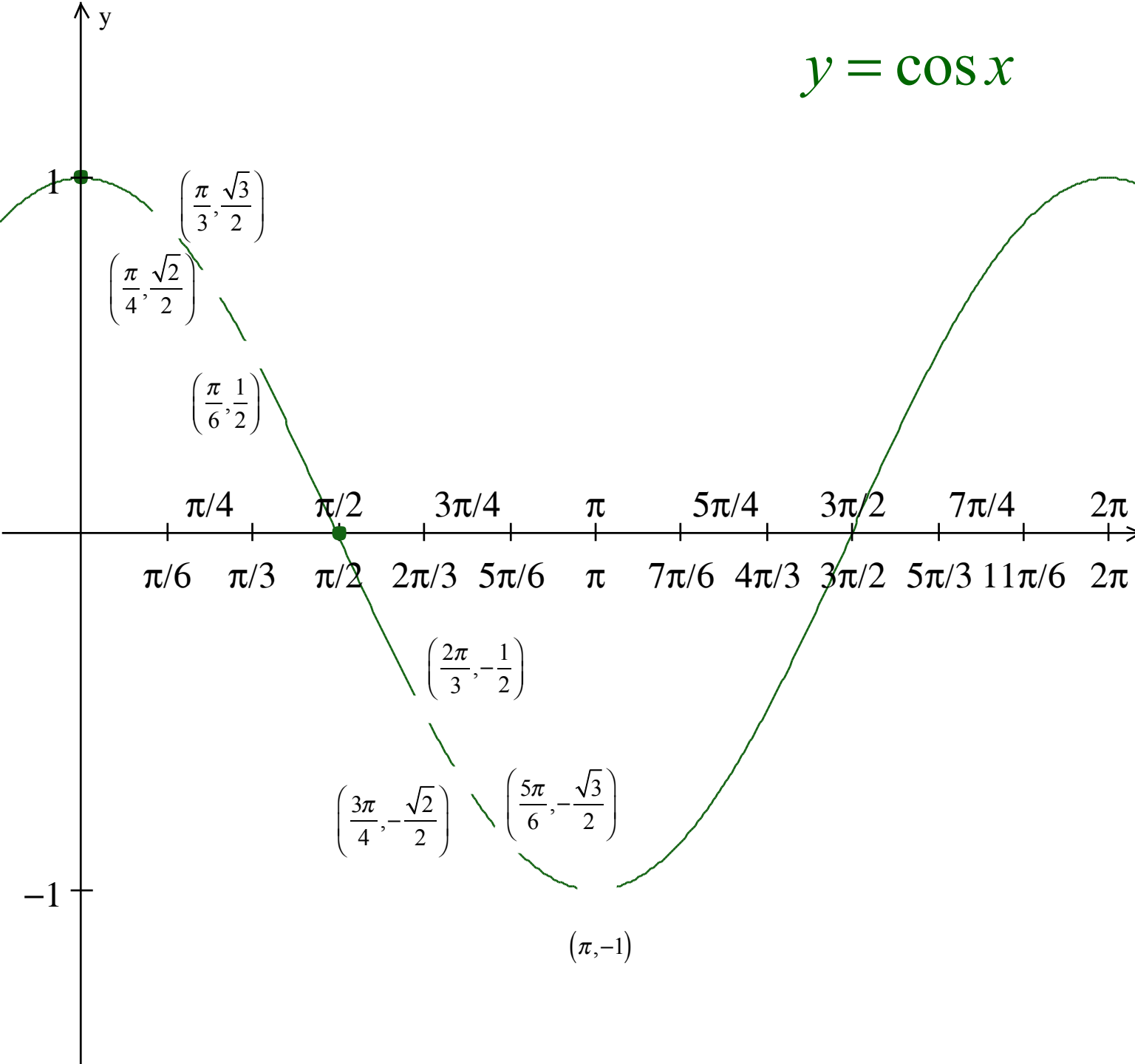
$$\frac{\sqrt{3}}{2} \approx 0.866$$



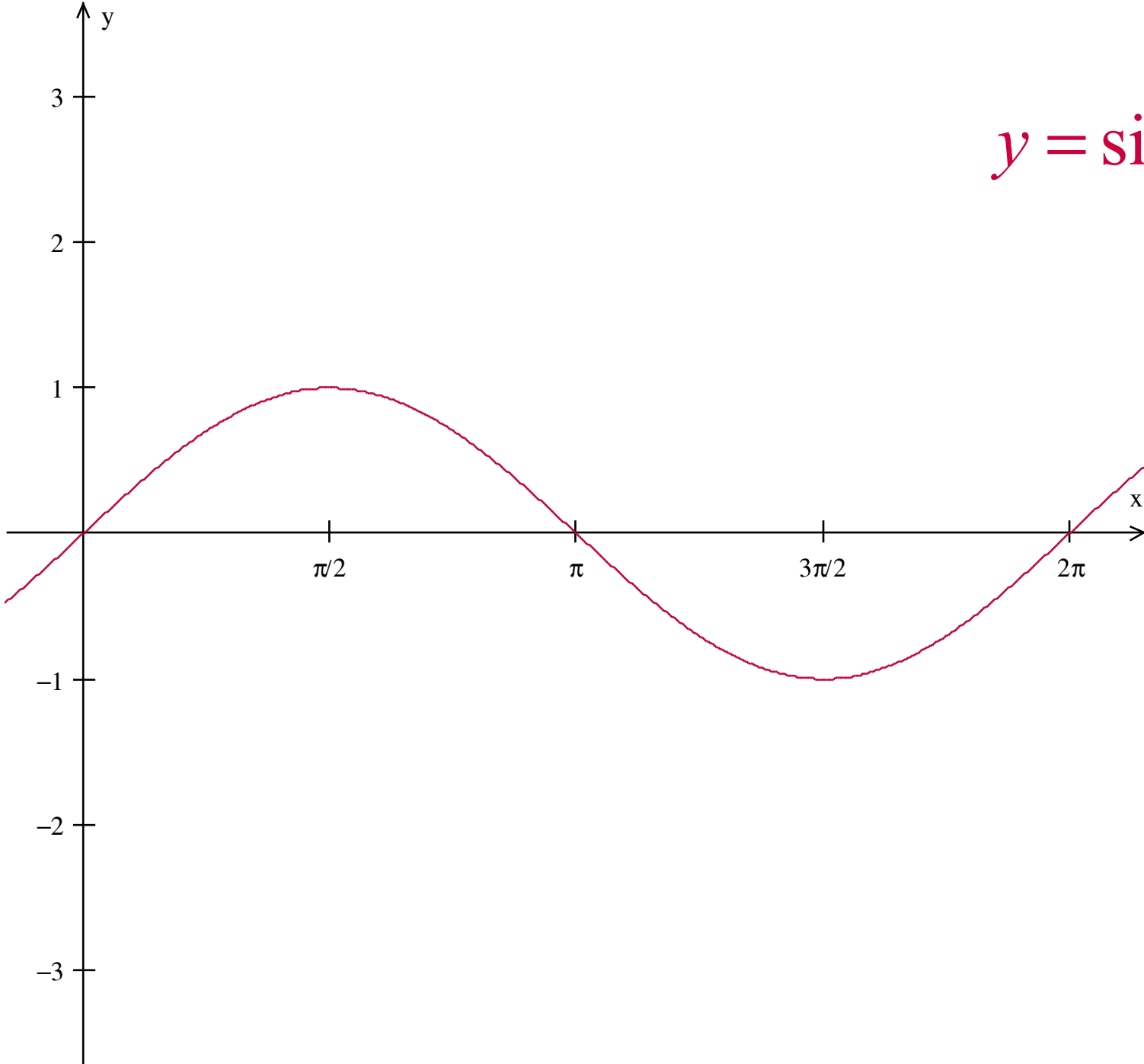
$$y = \cos x$$

$$\frac{\sqrt{2}}{2} \approx 0.707$$

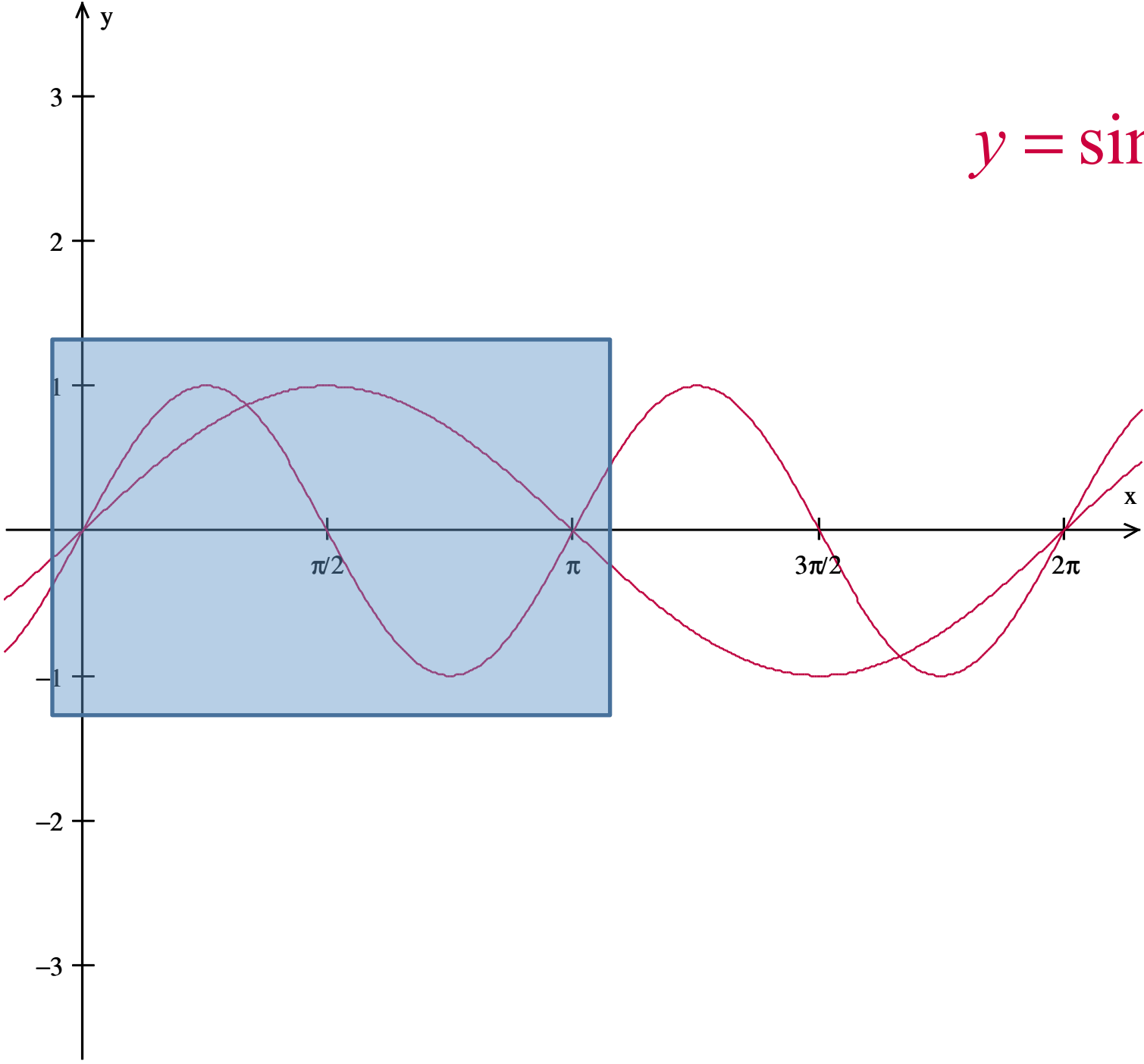
$$\frac{\sqrt{3}}{2} \approx 0.866$$



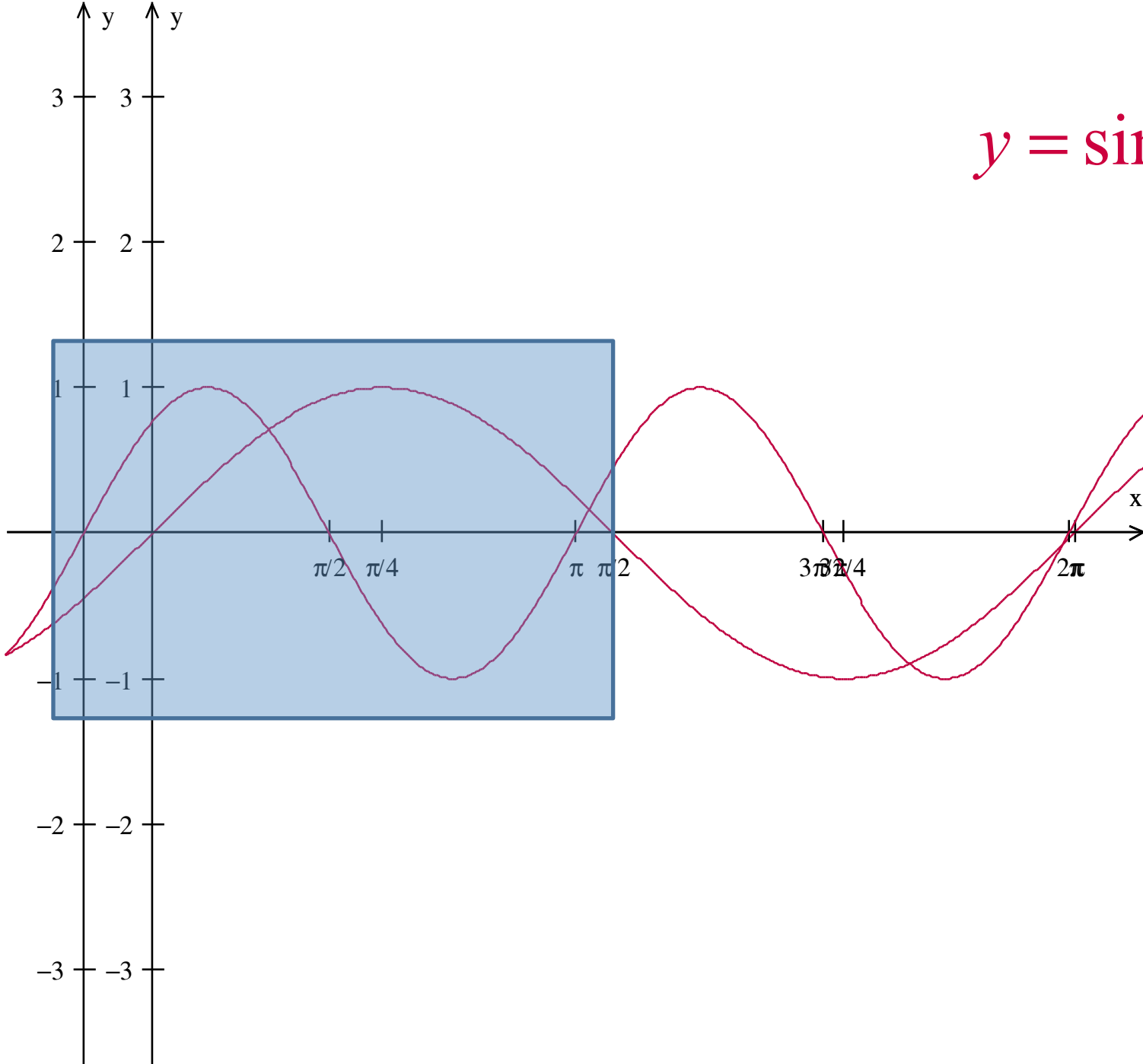
$$y = \sin x$$



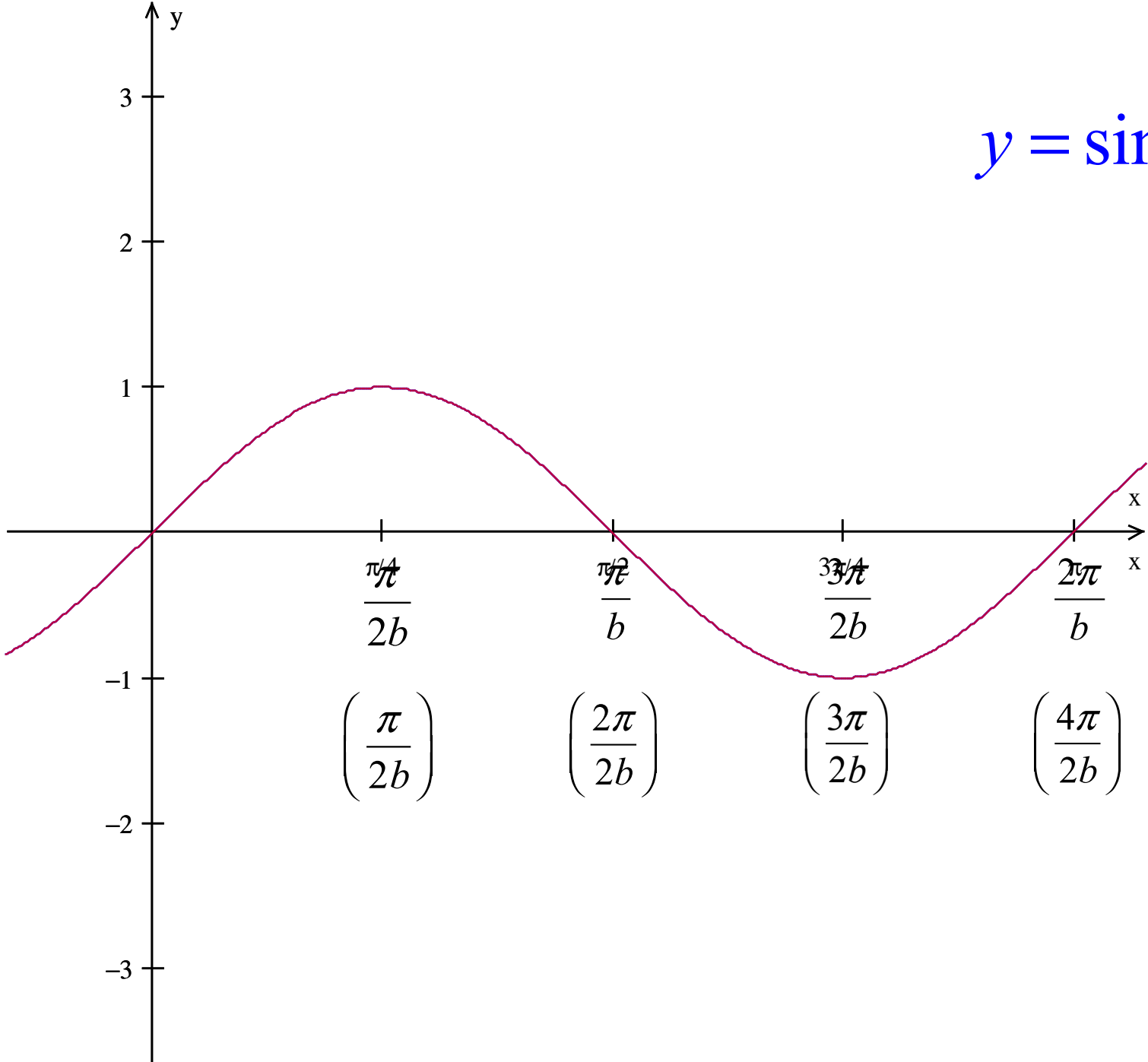
$$y = \sin 2x \quad ?$$



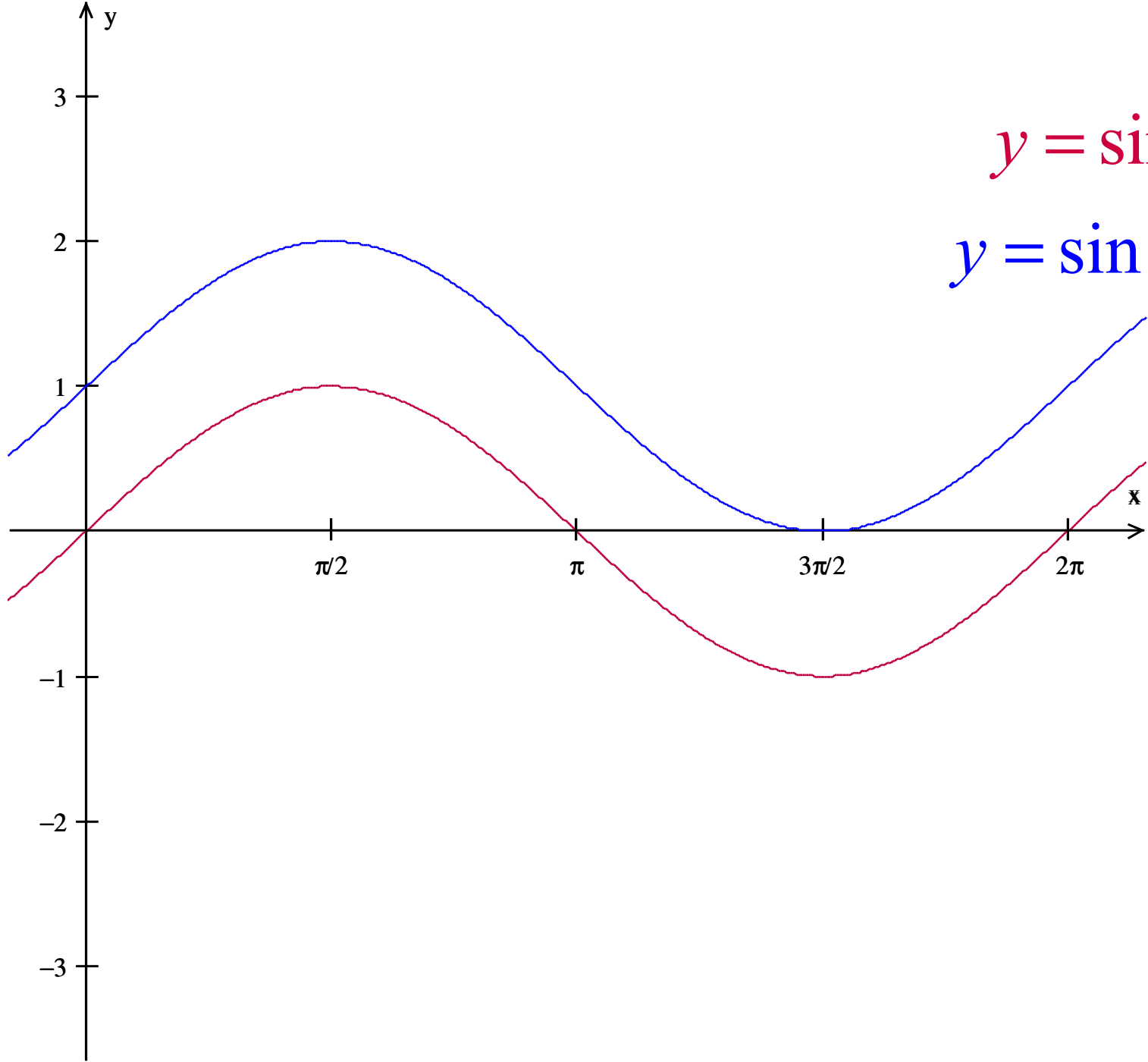
$$y = \sin 2x$$



$$y = \sin bx$$

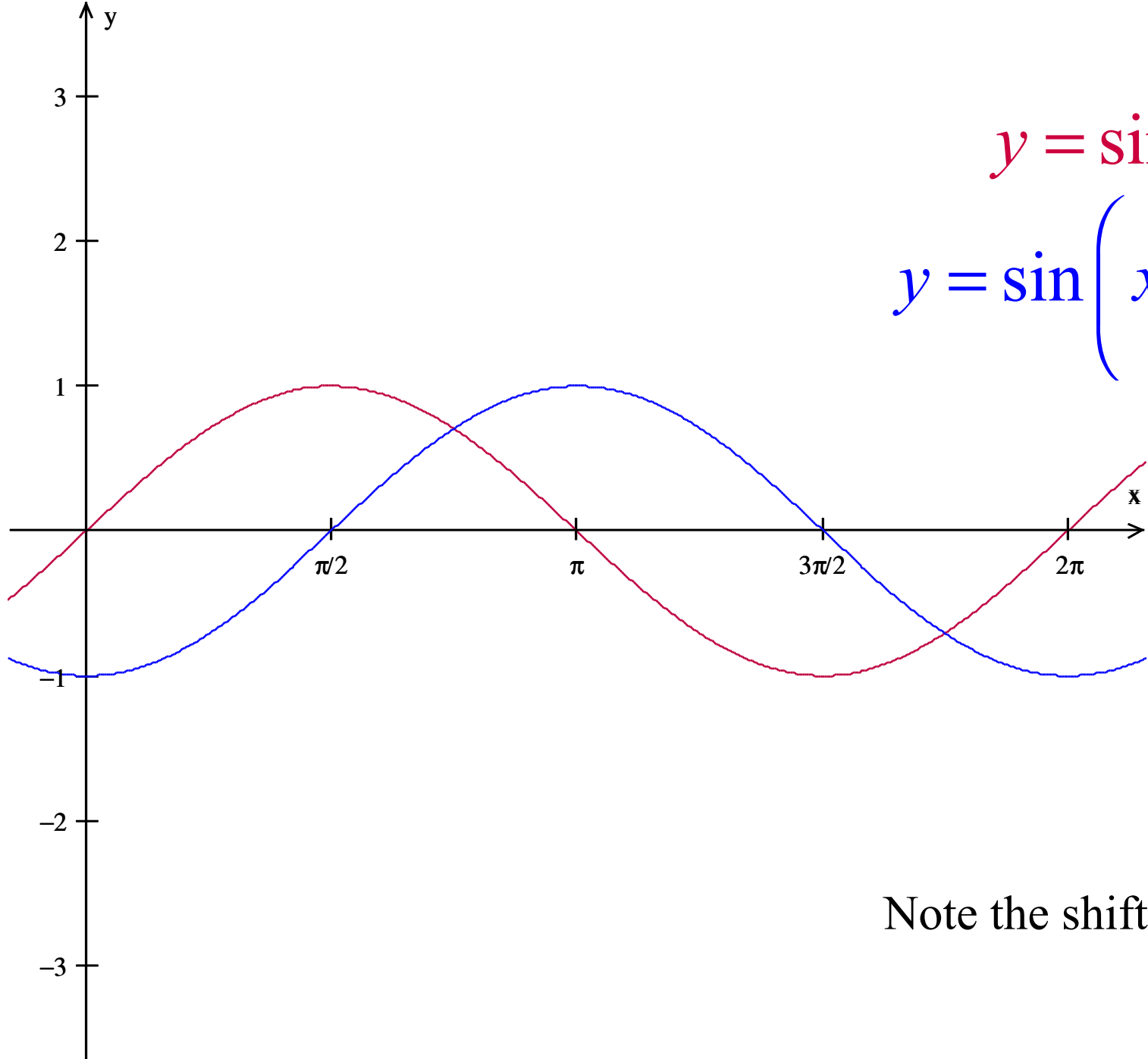






$$y = \sin x$$

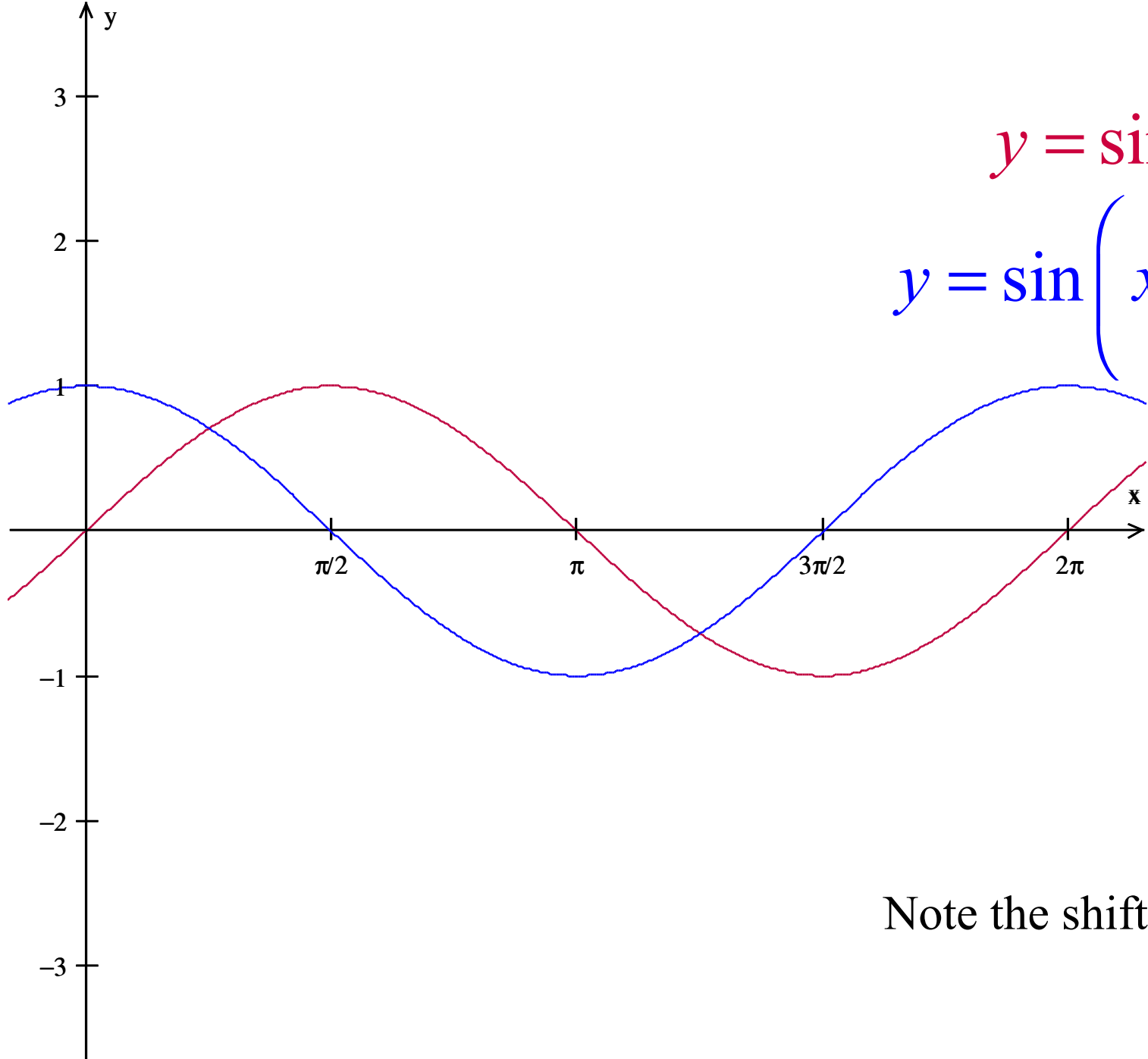
$$y = \sin x + 1$$



$$y = \sin x$$

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

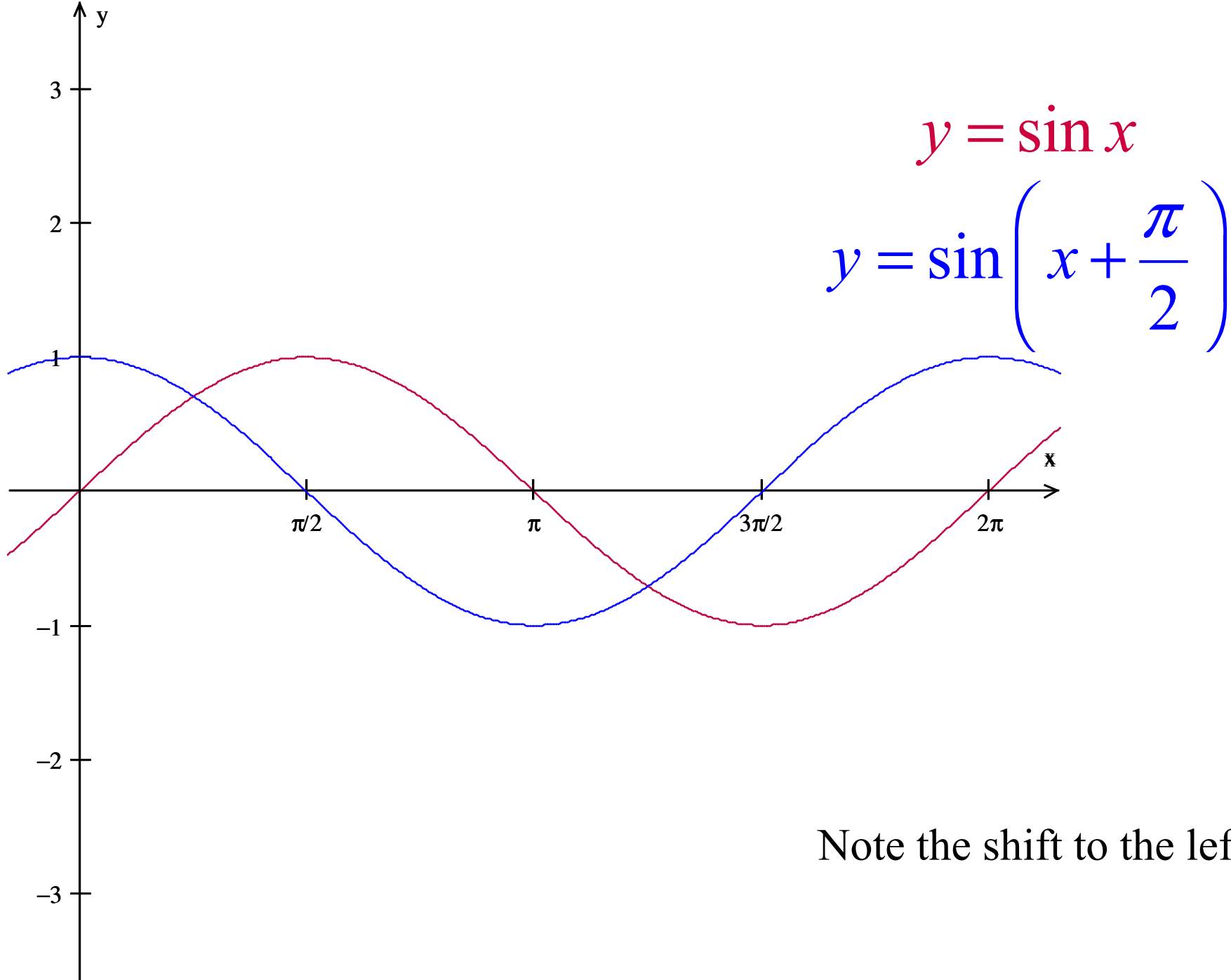
Note the shift to the right



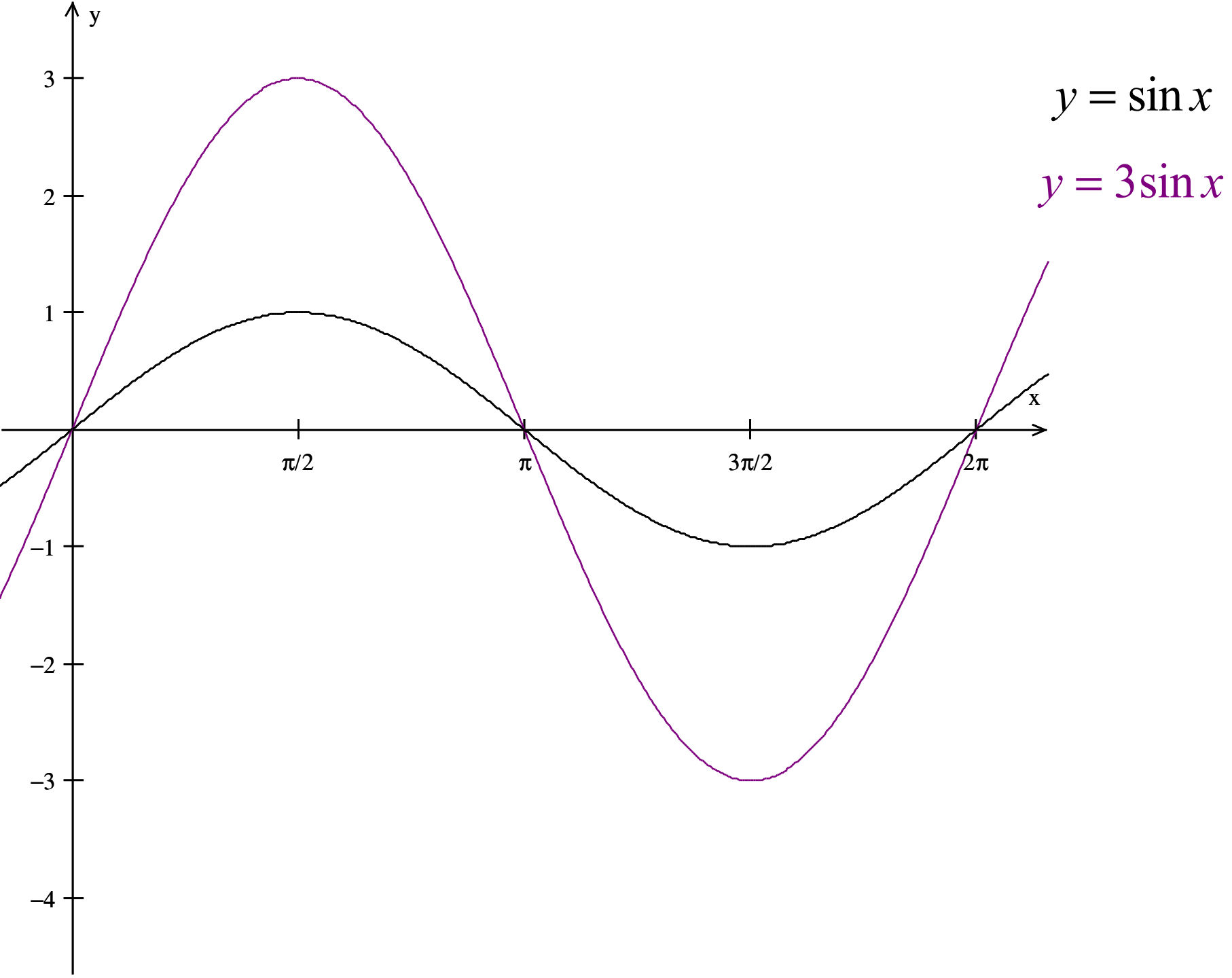
$$y = \sin x$$

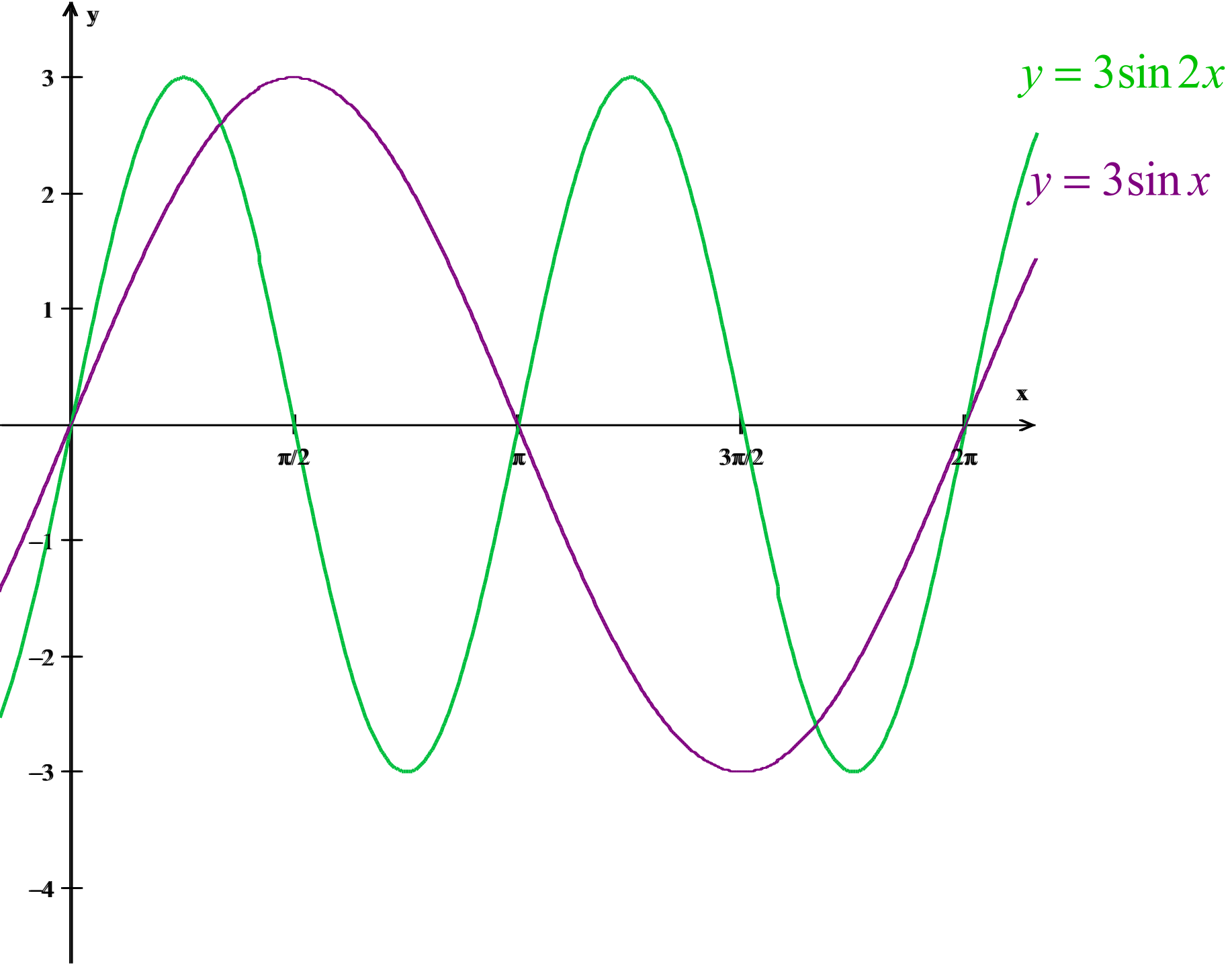
$$y = \sin\left(x + \frac{\pi}{2}\right)$$

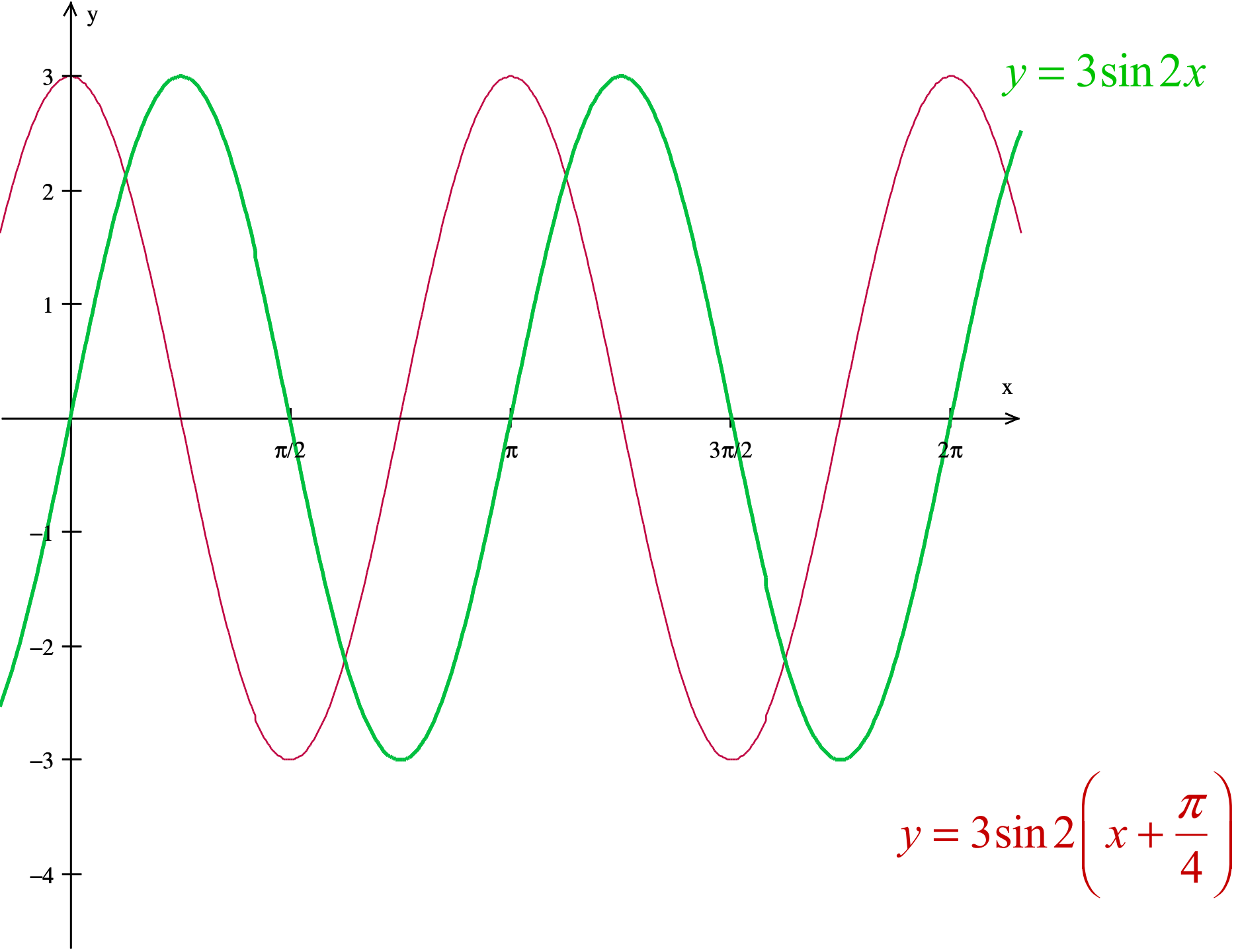
Note the shift to the left

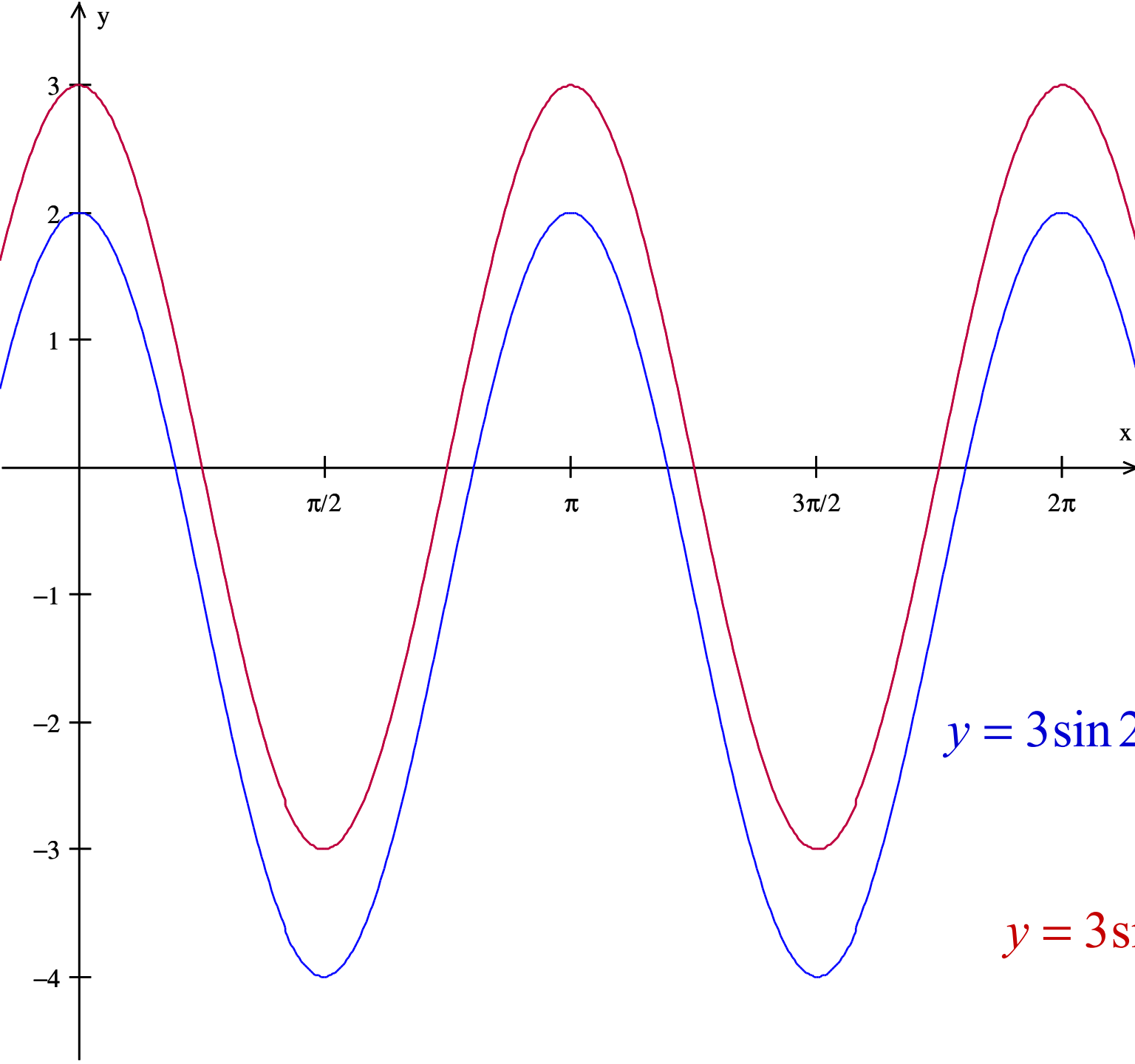


Note the shift to the left





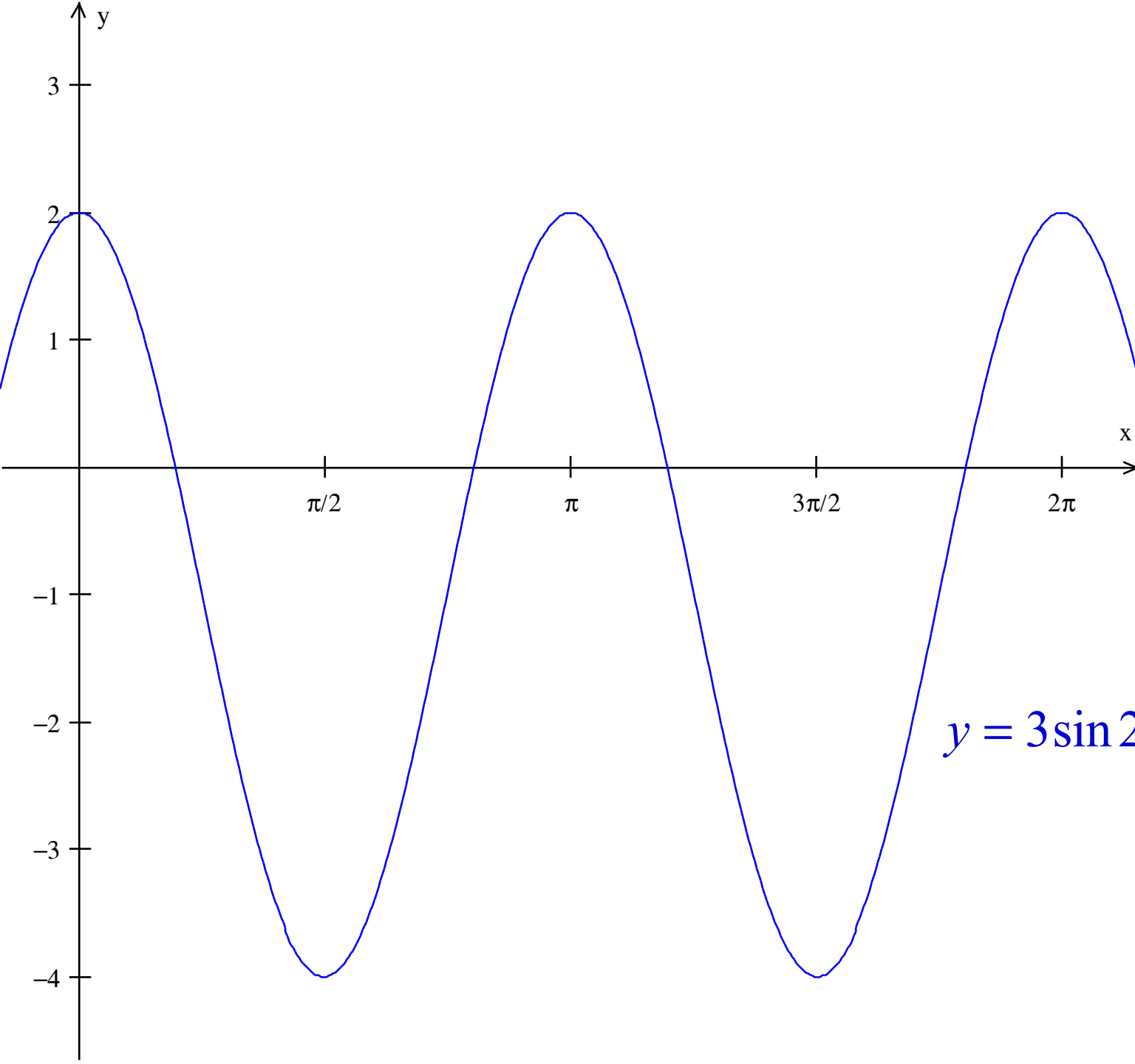




$$y = 3 \sin 2 \left( x + \frac{\pi}{4} \right) - 1$$

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





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