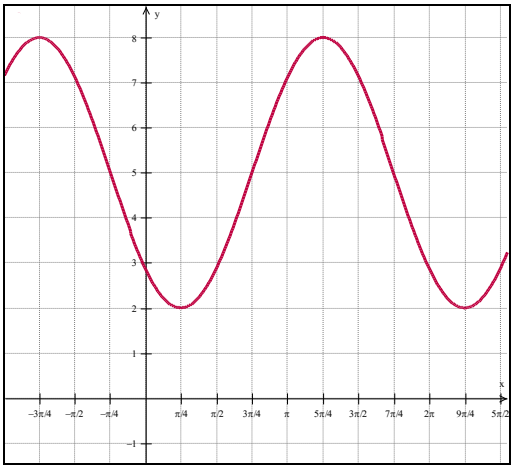
6.6 Modeling with Trigonometric Functions

Ex 1. Find the equation (in the form $y = a\sin[b(x-c)]+d$) of the trigonometric function represented graphically to the right.

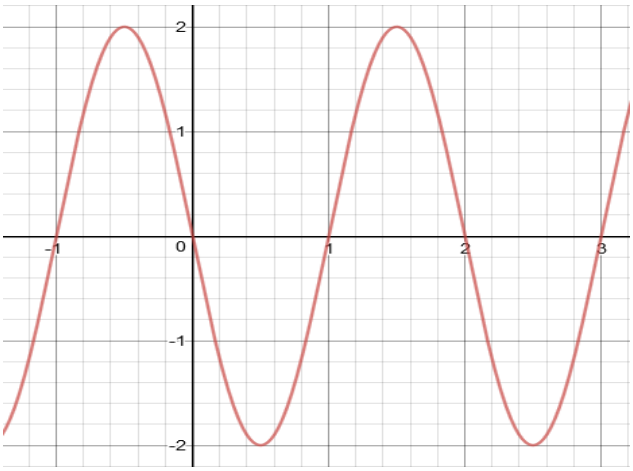


Ex 2. An oscilloscope hooked up to an alternating current (AC) circuit shows a sine curve. The device records the current in amperes (A) on the vertical axis and the time in seconds on the horizontal axis. At $t = \frac{1}{120}$ s, the current reads its first maximum value of 9 A. At $t = \frac{1}{40}$ s, the current reads its first minimum value of -3 A. Determine the equation of the function that express the current in terms of time in the form $f(x) = a\cos[b(x-c)]+d$.

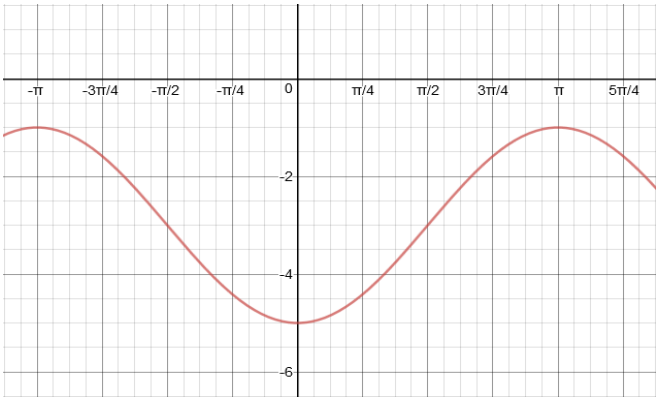
Ex 3. London Eye is a huge Ferris wheel with diameter 135 meters (443 feet) in London, England, which completes one rotation every 30 minutes. Riders board from a platform 2 meters above the ground. Express a rider's height as a function of time.

Ex 4. For each case, find the equation of the trigonometric function in the form $f(x) = a\sin[b(x-c)]+d$.

a)

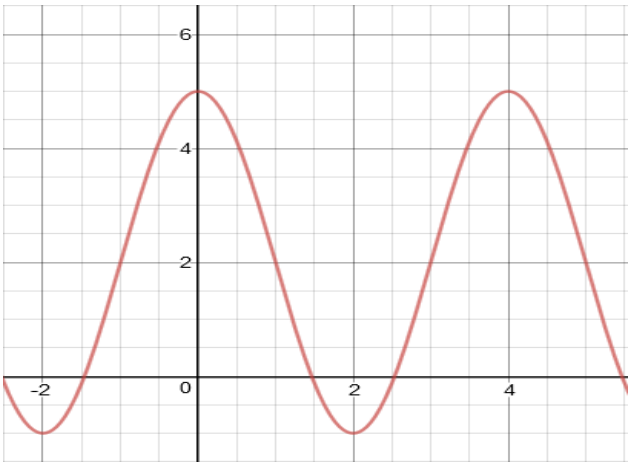


b)

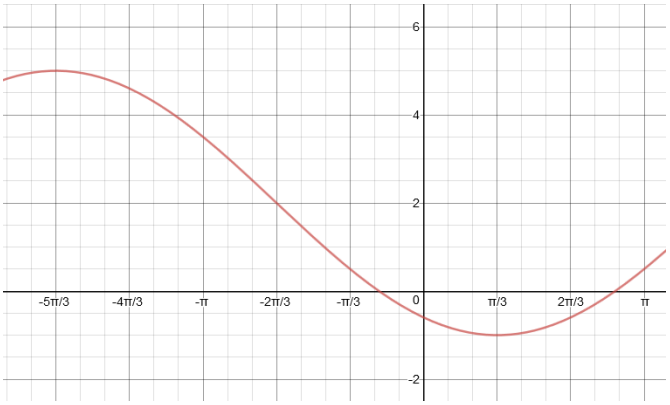


Ex 5. For each case, find the equation of the trigonometric function in the form $f(x) = a\cos[b(x-c)]+d$.

a)



b)



Reading: Nelson Textbook, Pages 354-360
Homework: Nelson Textbook, Page 360: #1, 6, 9, 13

