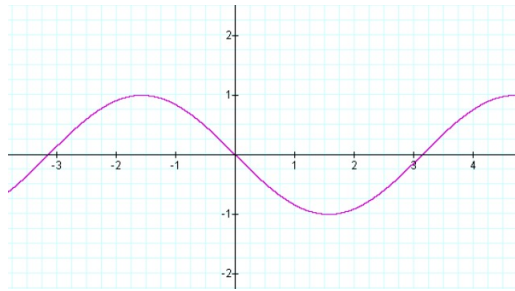


# Worksheet 1

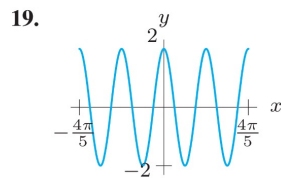
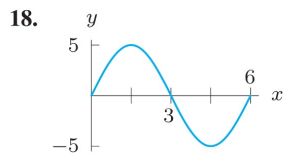
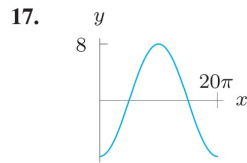
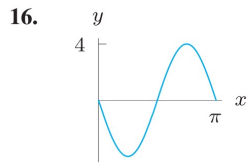
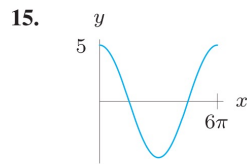
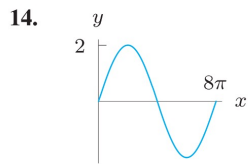
Dondi Ellis

January 16, 2015

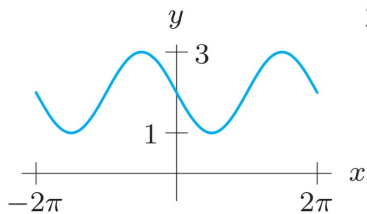


Graph of  $\sin x$ .

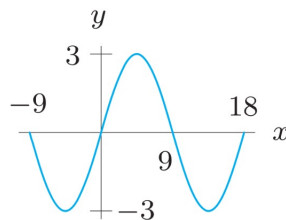
For Exercises 14–23, find a possible formula for each graph.



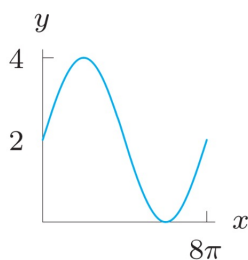
20.



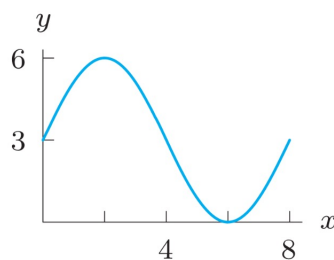
21.



22.



23.



37. (a) Match the functions  $\omega = f(t)$ ,  $\omega = g(t)$ ,  $\omega = h(t)$ ,  $\omega = k(t)$ , whose values are in the table, with the functions with formulas:

- (i)  $\omega = 1.5 + \sin t$       (ii)  $\omega = 0.5 + \sin t$   
 (iii)  $\omega = -0.5 + \sin t$       (iv)  $\omega = -1.5 + \sin t$

- (b) Based on the table, what is the relationship between the values of  $g(t)$  and  $k(t)$ ? Explain this relationship using the formulas you chose for  $g$  and  $k$ .  
 (c) Using the formulas you chose for  $g$  and  $h$ , explain why all the values of  $g$  are positive, whereas all the values of  $h$  are negative.

43. The Bay of Fundy in Canada has the largest tides in the world. The difference between low and high water levels is 15 meters (nearly 50 feet). At a particular point the depth of the water,  $y$  meters, is given as a function of time,  $t$ , in hours since midnight by

$$y = D + A \cos(B(t - C)).$$

- (a) What is the physical meaning of  $D$ ?  
 (b) What is the value of  $A$ ?  
 (c) What is the value of  $B$ ? Assume the time between successive high tides is 12.4 hours.  
 (d) What is the physical meaning of  $C$ ?

In Problems 56–57, explain what is wrong with the statement.

56. For the function  $f(x) = \sin(Bx)$  with  $B > 0$ , increasing the value of  $B$  increases the period.  
 57. For positive  $A$ ,  $B$ ,  $C$ , the maximum value of the function  $y = A \sin(Bx) + C$  is  $y = A$ .