Exercises and Problems for Section 0.0

1. If $r(t) = at^2 + 4$ find $r(2)$.

   (a) $2t^2 + 4$ **(b)** $4a + 4$ **(c)** $6a$ **(d)** $8a$

2. If $m(t) = 3t - 5$ then $m(0) =$

   (a) -5 **(b)** -2 **(c)** 0 **(d)** 3

3. If $m(t) = 3t - 5$ and $m(t) = 0$ then

   (a) $t = -3/5$ **(b)** $t = 3/5$ **(c)** $t = -5/3$ **(d)** $t = 5/3$

4. Match the expressions to the lettered points in Figure 1.

   (a) $(x_1, f(x_1))$
   (b) $(x_2, f(x_2))$
   (c) $(x_2, f(x_1))$
   (d) $(x_1, f(x_2))$
   (e) $(0, f(x_1))$
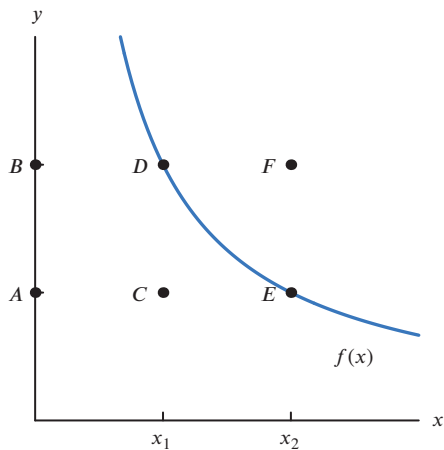   **(f)** $(0, f(x_2))$

Figure 1

5. If $y = f(x)$, then $f(6)$ is a point on the graph of the function.

   (a) True
   (b) False

6. The expression $f(6)$ is read f of 6.

   (a) True
   (b) False

7. In the expression $h(b)$, the input is b and the output is h.

   (a) True
   (b) False

8. For each part (i) - (vi) say whether the expression can be evaluated from Table 1, where $T = f(h)$. For part (v) and (vi) say whether the equation can be solved for h. Use (a) yes and (b) no.

   (i) $f(0)$
   (ii) $f(70)$
   (iii) $h(24)$
   (iv) $T(24)$
   (v) $f(h) = 0$
   (vi) $f(h) = 70$

Table 1

Hours, h	0	24	48	72
Temperature, T	75	65	85	70

9. Figure 2 shows the graph of the velocity of a cyclist traveling due east from home. For parts (i) - (v), say whether the statement is (a) true or (b) false.

   (i) If $v(t) = 0$, the cyclist is at home.
   (ii) $v(0) = v(30)$.
   (iii) Since $v(15) > v(30)$, the cyclist is further from home at $t = 15$ than $t = 30$.
   (iv) At some time, t, the velocity is 10.
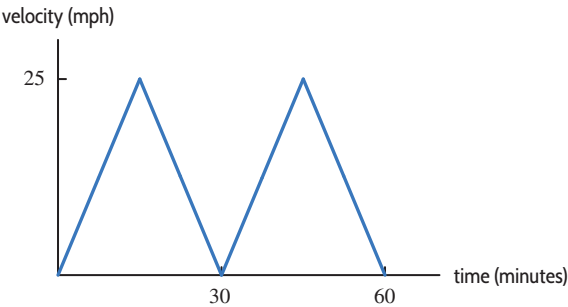   (v) The cyclist might have stopped for lunch after riding 30 minutes.

Figure 2

10. The US Postal Service has a formula to calculate the price to send a standard envelope within the US. What are the units of the input of this function?

   (a) Dollars
   (b) Destination
   (c) Weight
   (d) Dimensions

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11. There is a formula to convert a temperature in Fahrenheit to a temperature in Celsius. What are the units of the input of this function?

   (a) Degrees in Fahrenheit
   (b) Degrees in Celsius
   (c) Both
   (d) Neither

12. From the graph of $s(x)$ in Figure 3 determine whether each expression is (a) positive, (b) negative or (c) zero.

   (i) $s(2) - s(1)$
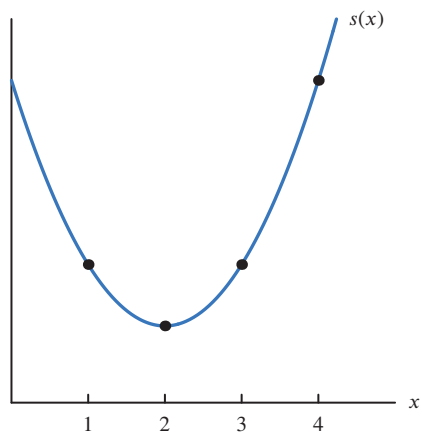   (ii) $s(3) - s(1)$
   (iii) $s(4) - s(3)$
   (iv) $s(1) - s(4)$

Figure 3