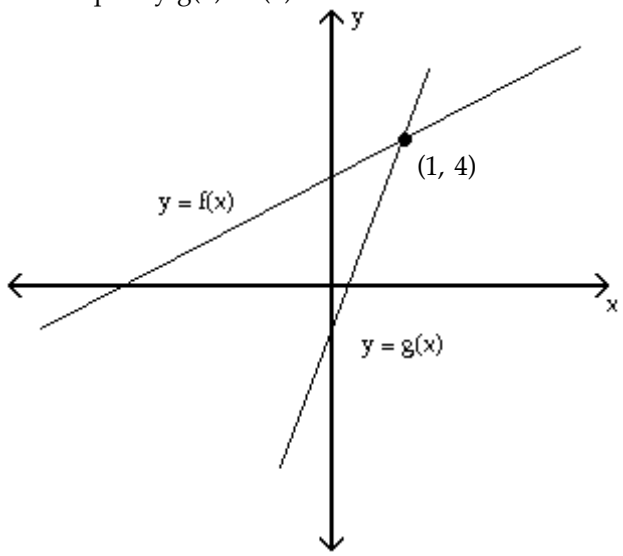
MATH 1710 Chapter 2 Review, Part 2 Otts, 09F

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

1. The graphs of two linear functions f and g are shown in the figure. Solve (i) the equation f(x) = g(x) and (ii) the inequality g(x) < f(x).



A) x = 4; x < 4 B) x = 1; x < 1 C) x = 0; 0 < x < 1 D) x = 1; x < 4

Solve the problem.

2. The charges for renting a moving van are $50 for the first 20 miles and $6 for each additional mile. Assume that a fraction of a mile is rounded up. (i) Determine the cost of driving the van 87 miles. (ii) Find a symbolic representation for a function f that computes the cost of driving the van x miles, where $0 < x \le 100$. (Hint: express f as a piecewise–constant function.)

A) $452;

$$f(x) = \begin{cases} 50 & \text{if } 0 < x \le 20 \\ 50 + 6(x - 20) & \text{if } 20 < x \le 100 \end{cases}$$

B) $692;

$$f(x) = \begin{cases} 50 & \text{if } 0 < x \le 20 \\ 50 + 6(x + 20) & \text{if } 20 < x \le 100 \end{cases}$$

3. The table lists the average composite scores on a national entrance exam for selected years.

Year	1984	1986	1988	1990	1992	1994	1996
Score	122.7	131.5	131.5	129.5	133.9	132.0	130.0

Evaluate f(1991).

A) 130.5 B) 131.7 C) 131.5 D) 130.9

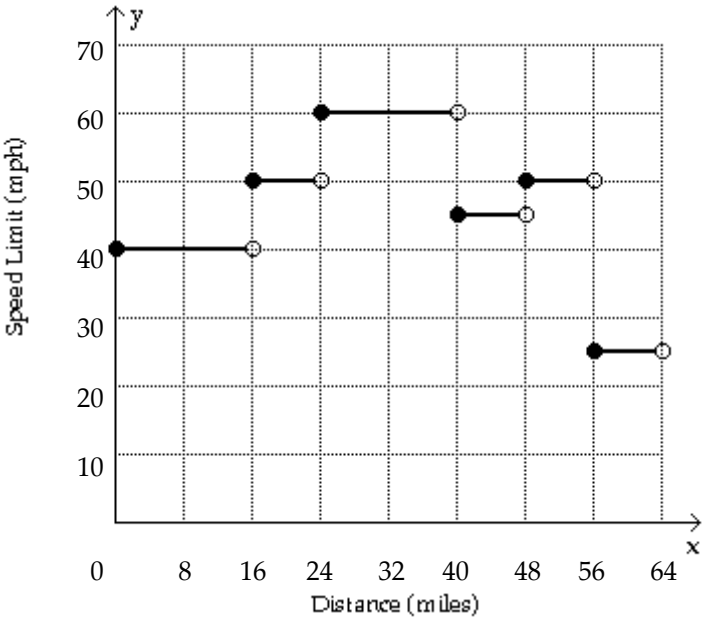
4. In Country X, the average hourly wage in dollars from 1945 to 1995 can be modeled by

$$f(x) = \begin{cases} 0.073(x - 1945) + 0.35 & \text{if } 1945 \le x < 1970 \\ 0.185(x - 1970) + 3.05 & \text{if } 1970 \le x \le 1995 \end{cases}$$

Use f to estimate the average hourly wages in 1950, 1970, and 1990.

A) \$0.72, \$2.18, \$6.75 B) \$3.42, \$0.35, \$6.75 C) \$0.72, \$3.05, \$6.75

5.



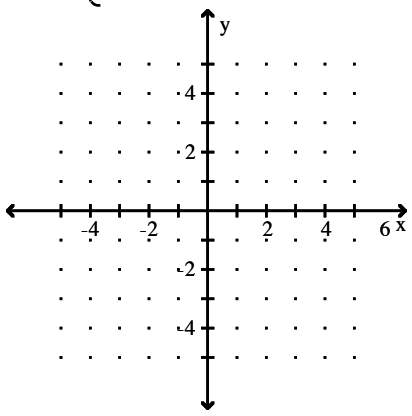
The graph of y = f(x) gives the speed limit y along a rural highway after traveling x miles. (i) What are the maximum and minimum speed limits along this stretch of highway? (ii) Estimate the miles of highway with a speed limit of 50 miles per hour.

A) Maximum 65 mph; minimum 25 mph; 18 miles
B) Maximum 60 mph; minimum 35 mph; 16 miles
C) Maximum 60 mph; minimum 25 mph; 16 miles
D) Maximum 70 mph; minimum 20 mph; 12 miles

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Sketch a graph of the function.

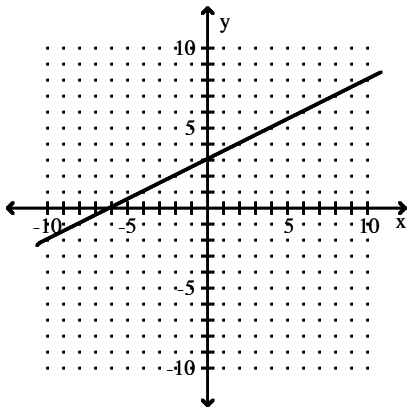
6. $f(x) = \begin{cases} 3 & \text{if } x \geq 1 \\ -2 - x & \text{if } x < 1 \end{cases}$



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use the given graph to find the x–intercept and the zero of the function.

7.

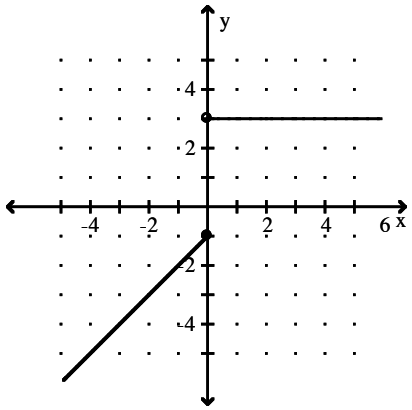


A) (–6, 3); –6 B) (3, 0); 3 C) (–6, 0); –6 D) (0, 0); 0

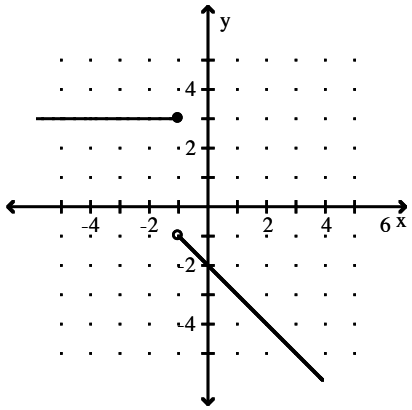
Sketch a graph of the function.

8. $f(x) = \begin{cases} x - 1 & \text{if } x > 0 \\ 3 & \text{if } x \le 0 \end{cases}$

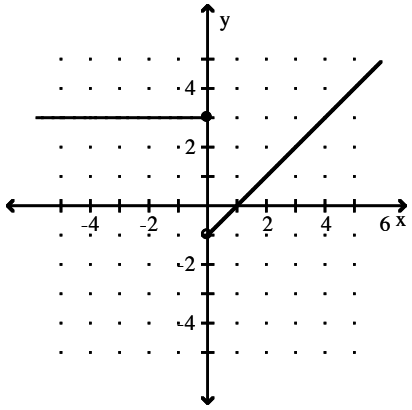
A)



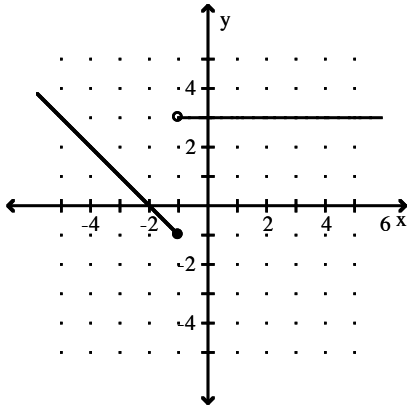
B)



C)

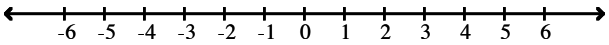


D)



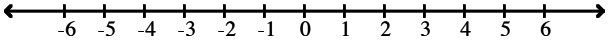
Solve the compound linear inequality graphically. Write your answer in interval notation.

9. $-13 < -4b + 3 \le 3$



A) $[-4, 0)$ B) $(-4, 0]$ C) $(0, 4]$ D) $[0, 4)$

10. $2 < \frac{4x - 8}{9} < 3$



A) $\left(\frac{13}{2}, \frac{35}{4}\right)$ B) $\left(-\infty, \frac{13}{2}\right) \cup \left(\frac{35}{4}, \infty\right)$ C) $\left(-\frac{35}{4}, \frac{13}{2}\right)$

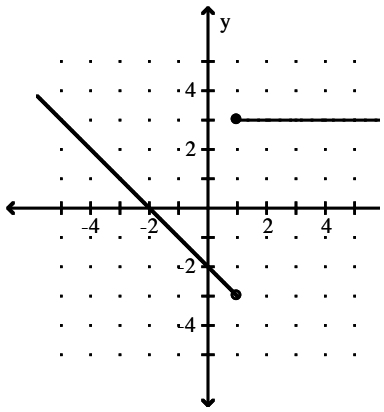
Solve the problem.

11. To convert a temperature from degrees Celsius to degrees Fahrenheit, you multiply the temperature in degrees Celsius by 1.8 and then add 32 to the result. Express F as a linear function of c.

A) $F(c) = \frac{c - 32}{1.8}$ B) $F(c) = 1.8c + 32$ C) $F(c) = 33.8c$ D) $F(c) = 1.8 + 32c$

12. Use the function from the previous item to convert 26° C to °F.

A) 69.8°F B) 78.8°F C) 74.1°F D) 66.5°F

1. B
   ID: CA4R 2.5.5–1
2. A
   ID: CA4R 2.1.12–1+
3. B
   ID: CA4R 2.1.12–4+
4. C
   ID: CA4R 2.1.12–5
5. C
   ID: CA4R 2.1.11–1
6. 

   ID: CA4R 2.1.15–1+
7. C
   ID: CA4R 2.1.5–2
8. C
   ID: CA4R 2.1.15–2+
9. D
   ID: CA4R 2.4.6–3
10. A
    ID: CA4R 2.4.6–4+
11. B
    ID: CA4R 2.1.10–1
12. B
    ID: CA4R 2.1.10–2+