1-4

NAME ______________________ DATE ____________ PERIOD ________

Practice

Writing Linear Equations

Write an equation in slope-intercept form for each line described.

1. slope $= -4$, y-intercept $= 3$

2. slope $= 5$, passes through $A(-3, 2)$

3. slope $= -4$, passes through $B(3, 8)$

4. slope $= \frac{4}{3}$, passes through $C(-9, 4)$

5. slope $= 1$, passes through $D(-6, 6)$

6. slope $= -1$, passes through $E(3, -3)$

7. slope $= 3$, y-intercept $= \frac{3}{4}$

8. slope $= -2$, y-intercept $= -7$

9. slope $= -1$, passes through $F(-1, 7)$

10. slope $= 0$, passes through $G(3, 2)$

11. ***Aviation*** The number of active certified commercial pilots has been declining since 1980, as shown in the table.

a. Find a linear equation that can be used as a model to predict the number of active certified commercial pilots for any year. Assume a steady rate of decline.

b. Use the model to predict the number of pilots in the year 2003.

Number of Active Certified Pilots	
Year	Total
1980	182,097
1985	155,929
1990	149,666
1993	143,014
1994	138,728
1995	133,980
1996	129,187

Source: U. S. Dept. of Transportation

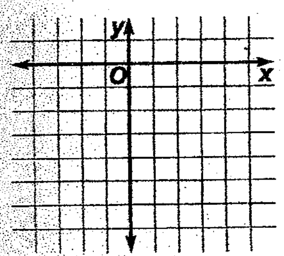
1-3

Practice

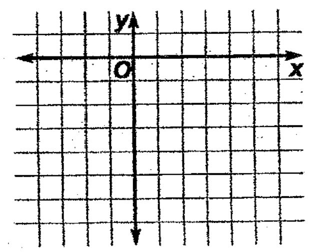
Graphing Linear Equations

Graph each equation using the x- and y-intercepts.

1. $2x - y - 6 = 0$

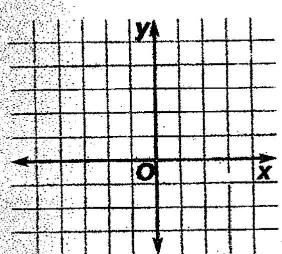


2. $4x + 2y + 8 = 0$

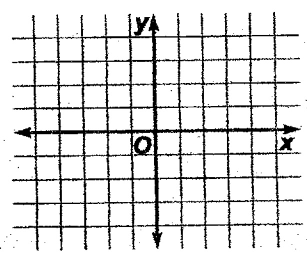


Graph each equation using the y-intercept and the slope.

3. $y = 5x - \frac{1}{2}$

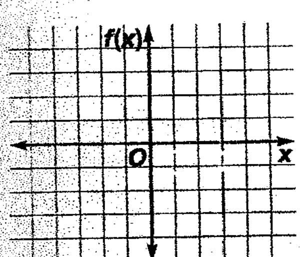


4. $y = \frac{1}{2}x$

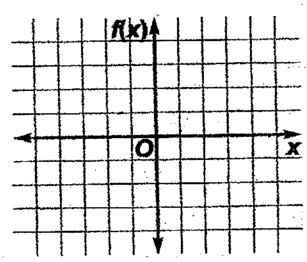


Find the zero of each function. Then graph the function.

5. $f(x) = 4x - 3$



6. $f(x) = 2x + 4$



7. ***Business*** In 1990, a two-bedroom apartment at Remington Square Apartments rented for \$575 per month. In 1999, the same two-bedroom apartment rented for \$850 per month. Assuming a constant rate of increase, what will a tenant pay for a two-bedroom apartment at Remington Square in the year 2000?

1-2

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Practice

Composition of Functions

Given $f(x) = 2x^2 + 8$ and $g(x) = 5x - 6$, find each function.

1. $(f + g)(x)$

2. $(f - g)(x)$

3. $(f \cdot g)(x)$

4. $\left(\frac{f}{g}\right)(x)$

Find $[f \circ g](x)$ and $[g \circ f](x)$ for each $f(x)$ and $g(x)$.

5. $f(x) = x + 5$
$g(x) = x - 3$

6. $f(x) = 2x^3 - 3x^2 + 1$
$g(x) = 3x$

7. $f(x) = 2x^2 - 5x + 1$
$g(x) = 2x - 3$

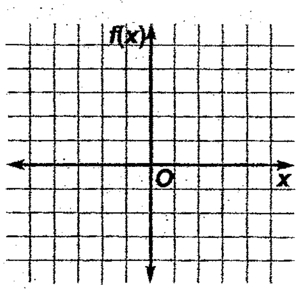
8. $f(x) = 3x^2 - 2x + 5$
$g(x) = 2x - 1$

9. State the domain of $[f \circ g](x)$ for $f(x) = \sqrt{x - 2}$ and $g(x) = 3x$.

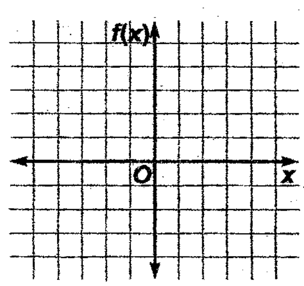
Piecewise Functions

Graph each function.

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



2. $f(x) = \begin{cases} -2 \text{ if } x \leq -1 \\ 1 + x \text{ if } -1 < x < 2 \\ 1 - x \text{ if } x > 2 \end{cases}$



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1-1

Practice

Relations and Functions

State the domain and range of each relation. Then state whether the relation is a function. Write yes or no.

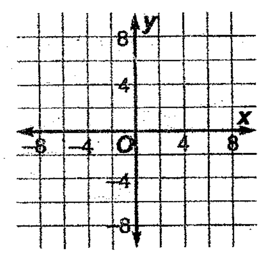
1. $\{(-1, 2), (3, 10), (-2, 20), (3, 11)\}$

2. $\{(0, 2), (13, 6), (2, 2), (3, 1)\}$

3. $\{(1, 4), (2, 8), (3, 24)\}$

4. $\{(-1, -2), (3, 54), (-2, -16), (3, 81)\}$

5. The domain of a relation is all even negative integers greater than -9. The range y of the relation is the set formed by adding 4 to the numbers in the domain. Write the relation as a table of values and as an equation. Then graph the relation.



Evaluate each function for the given value.

6. $f(-2)$ if $f(x) = 4x^3 + 6x^2 + 3x$

7. $f(3)$ if $f(x) = 5x^2 - 4x - 6$

8. $h(t)$ if $h(x) = 9x^9 - 4x^4 + 3x - 2$

9. $f(g + 1)$ if $f(x) = x^2 - 2x + 1$

10. ***Climate*** The table shows record high and low temperatures for selected states.

a. State the relation of the data as a set of ordered pairs.

b. State the domain and range of the relation.

c. Determine whether the relation is a function.

Record High and Low Temperatures (°F)		
State	High	Low
Alabama	112	−27
Delaware	110	−17
Idaho	118	−60
Michigan	112	−51
New Mexico	122	−50
Wisconsin	114	−54

Source: National Climatic Data Center