**2.5** Equations of Lines and Linear Models

**Point-Slope Form**

The **point-slope form** of the equation of the line with slope *m* passing through the point  is given as follows.



**CLASSROOM EXAMPLE 1 Using the Point-Slope Form (Given a Point and the Slope)**

Write an equation of the line through the point  having slope −2.

**CLASSROOM EXAMPLE 2 Using the Point-Slope Form (Given Two Points)**

Write an equation of the line through the points  and  Write the result in standard form 

**Slope-Intercept Form**

The **slope-intercept form** of the equation of the line with slope *m* and *y*-intercept (0, *b*) is given as follows.



**CLASSROOM EXAMPLE 3 Finding Slope and *y*-Intercept from an Equation of a Line**

Find the slope and *y*-intercept of the line with equation .

**CLASSROOM EXAMPLE 5 Finding an Equation from a Graph**

|  |  |
| --- | --- |
| Use the graph of the linear function *f* shown in the figure to complete the following.  **(a)** Identify the slope, *y*-intercept, and *x*-intercept. | ce02-05-05 |
| **(b)** Write an equation that defines *f*. |

**CLASSROOM EXAMPLE 6 Finding Equations of Parallel and Perpendicular Lines**

Write an equation in both slope-intercept and standard form of the line that passes through the point (2, –4) and satisfies the given condition.

**(a)** parallel to the line  **(b)** perpendicular to the line 

**CLASSROOM EXAMPLE 8 Solving an Equation with a Graphing Calculator**

Use a graphing calculator to solve 