FORMS OF THE LINEAR FUNCTION GENERAL EQUATION

$y = mx + b$	Slope-intercept form.
$y - y_1 = m(x - x_1)$	Point-slope form. (x_1, y_1) is a point on the graph.
$Ax + By = C$	"$Ax + By = C$" form. A, B, and C stand for constants.

Objective:
Given an equation in point-slope form, plot the graph quickly, and transform it to the other two forms.

$(y-k) = m(x-h)$ Point-slope form

point $= (h, k)$

EXAMPLE

If $y - 5 = -\frac{3}{2}(x + 1)$,

a. Plot the graph quickly.
b. Transform the equation to slope-intercept form.
c. Transform the equation to $Ax + By = C$ form, where A, B, and C stand for *integer* constants.

Solution

a. From the equation, the slope is $-\frac{3}{2}$. A point on the graph is $(-1, 5)$ because substituting 5 for y makes the left member 0 and substituting -1 for x makes the right member 0. The graph is shown in Figure 3-3.

EXAMPLE FOR HW 4-B

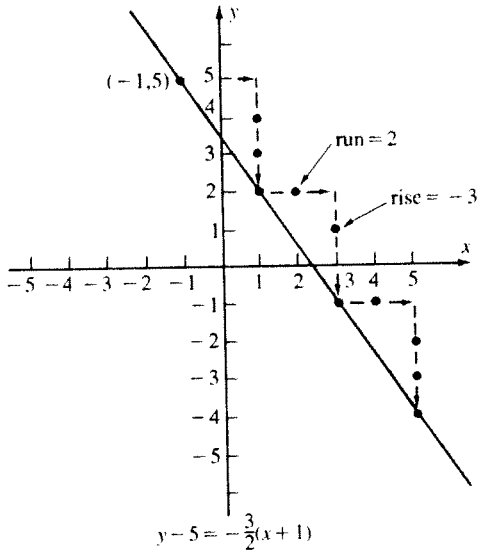

Figure 3-3

b. The equation can be transformed to slope-intercept form by distributing the $-\frac{3}{2}$, then adding 5 to each member.

$$y - 5 = -\frac{3}{2}(x + 1),$$

$$y - 5 = -1.5x - 1.5$$

$$\underline{y = -1.5x + 3.5}$$

c. Starting with the answer in part (b), you can add $1.5x$ to each member, then multiply by 2 to make each coefficient an integer.

$$1.5x + y = 3.5$$

$$\underline{3x + 2y = 7}$$

HW 4

PART A

For Problems 1 through 20, plot the graph neatly on graph paper. Use the slope and y-intercept, where possible.

1. $y = \frac{3}{5}x + 3$
2. $y = \frac{5}{2}x - 1$
3. $y = -\frac{3}{2}x - 4$
4. $y = -\frac{1}{4}x + 3$
5. $y = 2x - 5$
6. $y = 3x - 2$
7. $y = -3x + 1$
8. $y = -2x + 6$
9. $7x + 2y = 10$
10. $3x + 5y = 10$
11. $x - 4y = 12$
12. $2x - 5y = 15$
13. $y = 3x$
14. $y = -2x$
15. $y = 3$
16. $y = -5$

PART B

For Problems 1 through 10,

a. Plot the graph, showing clearly the point and slope that appear in the equation.
b. Transform the equation to slope-intercept form.
c. Transform the equation to $Ax + By = C$ form, where A, B, and C are all integers.

1. $y - 2 = \frac{3}{5}(x - 1)$
2. $y - 3 = \frac{2}{5}(x - 6)$
3. $y + 4 = \frac{7}{2}(x - 3)$
4. $y + 1 = \frac{7}{3}(x - 4)$
5. $y - 6 = -\frac{1}{4}(x + 2)$
6. $y - 2 = -\frac{1}{2}(x + 5)$
7. $y + 1 = -2(x + 4)$
8. $y + 6 = -3(x + 2)$
9. $y = \frac{1}{3}(x - 12)$
10. $y - 5 = \frac{2}{5}x$