

Section 6.5 Slope-Point Form of the Equation for a Linear Function

The equation of a line that passes through $P(x_1, y_1)$ and has slope m is:

$$y - y_1 = m(x - x_1)$$

Example 1

a) Identify slope and point in the equations.

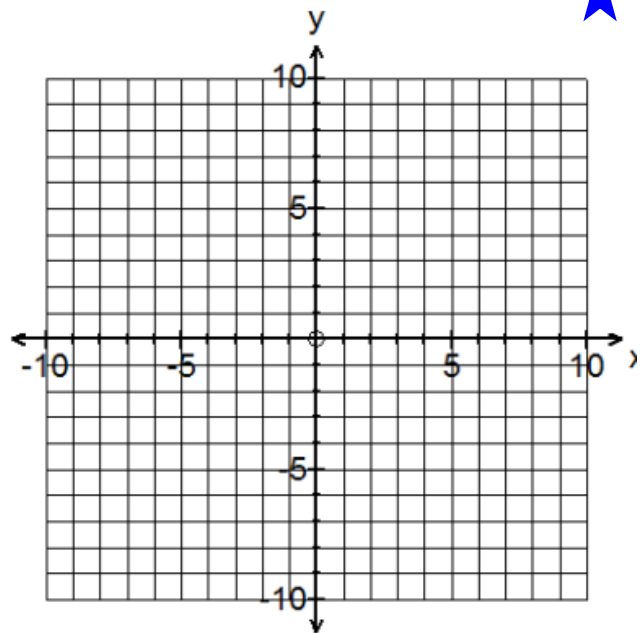
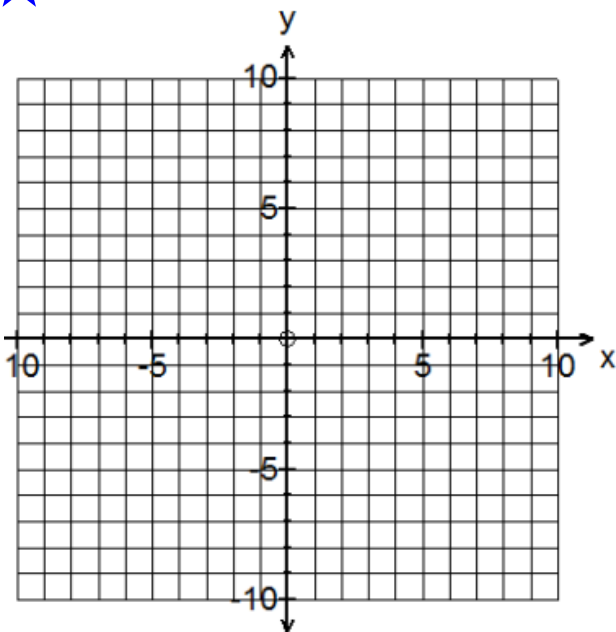
b) Graph each linear function.

Step 1: Plot the given point

Step 2: From the point, follow the directions of the slope.

i) $y - 5 = -3(x + 2)$

ii) $y - 2 = \frac{1}{3}(x + 4)$

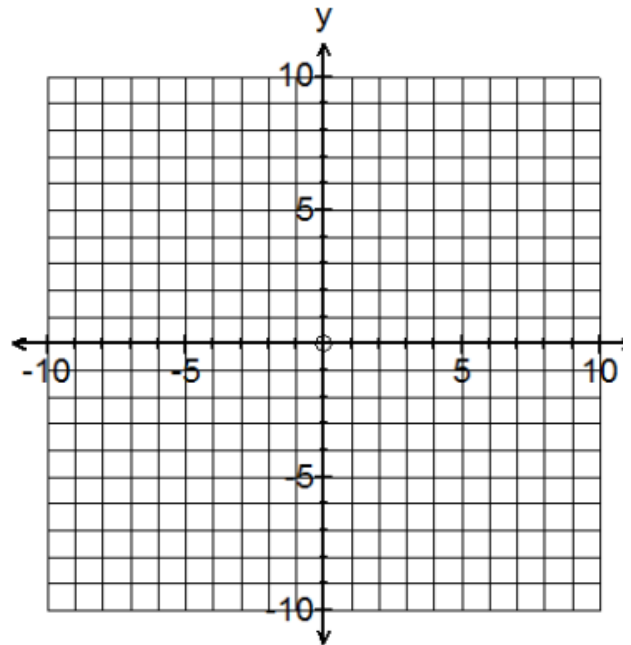
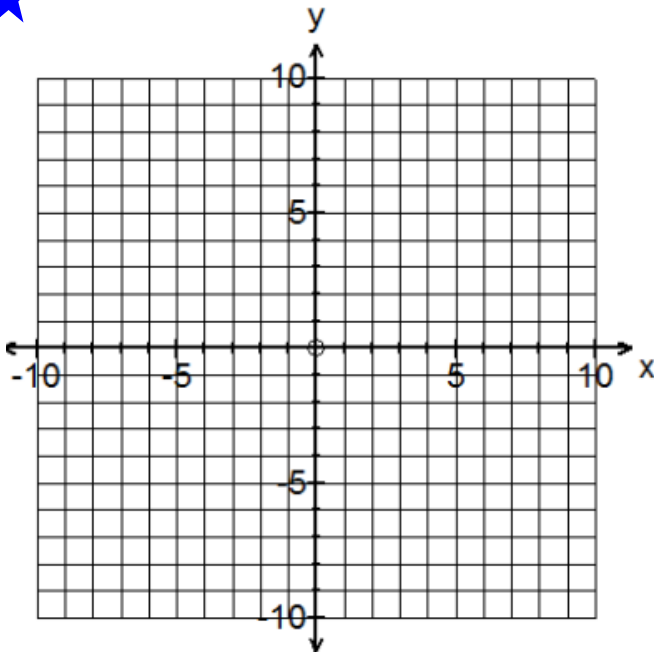


Note: The signs for the coordinates of the point are opposite!

Your Turn

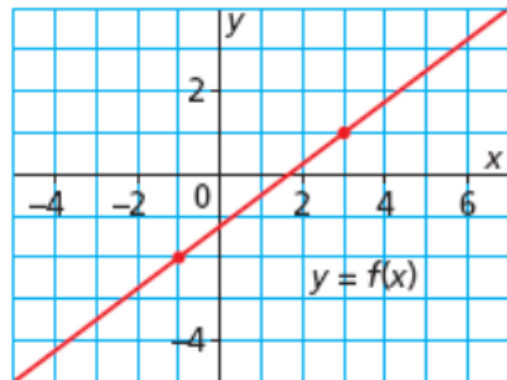
iii) $y + 1 = -\frac{2}{5}(x + 4)$

iv) $y + 5 = -4(x - 6)$



Example 2

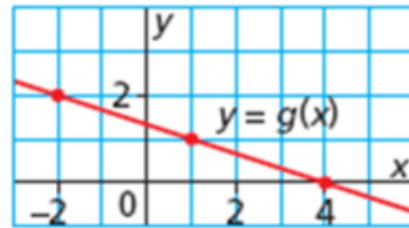
- a) Write the equation of the line in Slope Point form.



- b) Re-write the equation into Slope-Intercept form.
- c) What is the y-intercept of the line?

Your Turn

- a) Write the equation of the line in Slope Point form.



- b) Re-write the equation into Slope-Intercept form.
- c) What is the y-intercept of the line?

Work Book Questions

p.372 - 373 #4bdf, 5ac, 6ab,
9a(i)(ii)(iii)(iv), 9b(i)(ii)(iii)(iv)

Extra Practice Questions

p.372 - 373 #4ace, 5bd, 6cd

Example 3

Given points A(-3, 5) and B(3,1), write the equation of a line in:

A). Slope-point form

B). Slope-intercept form

Your Turn

Given points A(1, 4) and B(2,2), write the equation of a line in:

A). Slope-point form

B). Slope-intercept form

Example 4

Write the equation, in slope-point form, for the line that passes through R(1, -1) and is:

a) Parallel to the line $y = \frac{2}{3}x - 5$

b) Perpendicular to the line $y = \frac{2}{3}x - 5$

Summary:

↳ The advantages of slope-intercept form $y = mx + b$ are:

↳ The advantages of slope-point form $y - y_1 = m(x - x_1)$ are:

Work Book Questions

p.372 - 373 # 11ab, 12abcd, 14ac,
22ab, 23a

Extra Practice Questions

p.372 - 373 #11cd, 14b, 21,
23b, 24