

Chapter 4 Review

1. What is the slope-intercept form of the equation of a line with a slope of 5 and a y-intercept of -8?

$$y = 5x - 8$$

2. A line passes through (2, -5) and (6, 3). Write an equation of the line in slope-intercept form.

$$m = \frac{3 - (-5)}{6 - 2} = \frac{8}{4} = 2$$

$$y - 3 = 2(x - 6)$$

$$y - 3 = 2x - 12$$

$$y = 2x - 9$$

OR

$$3 = 2(6) + b$$

$$3 = 12 + b$$

$$-9 = b$$

$$\Rightarrow y = 2x - 9$$

3. A line passes through (2, -3) with a slope of $\frac{1}{2}$. Write an equation of the line in slope-intercept form.

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

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

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

OR

$$-3 = \frac{1}{2}(2) + b$$

$$-3 = 1 + b$$

$$-4 = b$$

$$\Rightarrow y = \frac{1}{2}x - 4$$

4. Convert the following equation into slope-intercept form: $y - 5 = \frac{4}{3}(x - 3)$

$$y - 5 = \frac{4}{3}x - 4$$

$$+5 \quad +5$$

$$y = \frac{4}{3}x + 1$$

5. Convert the following equation into standard form: $y + 2 = -\frac{5}{2}(x - 6)$

$$2[y + 2 = -\frac{5}{2}(x - 6)]$$

$$2y + 4 = -5(x - 6)$$

$$2y + 4 = -5x + 30$$

$$2y = -5x + 26$$

$$5x + 2y = 26$$

6. Find the slope-intercept form of the equation of the line that passes through (-5, 3) and is parallel to the following equation: $12x - 3y = 10$.

$$\Rightarrow -3y = -12x + 10$$

$$y = 4x - \frac{10}{3}$$

$$(-5, 3); m = 4$$

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

$$y - 3 = 4(x + 5)$$

$$y - 3 = 4x + 20$$

$$\Rightarrow y = 4x + 23$$

7. Find the slope-intercept form of the equation of the line that passes through (4, -1) and is perpendicular to the following equation: $7x - 2y = 3$. $\Rightarrow -2y = -7x + 3$

$$m = -\frac{2}{7} \quad ; \quad (4, -1)$$

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

$$y + 1 = -\frac{2}{7}(x - 4)$$

$$y = \frac{7}{2}x - \frac{3}{2}$$

$$y + 1 = -\frac{2}{7}x + \frac{8}{7}$$

$$y = -\frac{2}{7}x + \frac{1}{7}$$

8. A line passes through (-2, -3) with a slope of 0? Write an equation of the line in slope-intercept form.

slope = 0 \Rightarrow horizontal line

$$y = -3$$

9. A cable company charges \$55 each month plus an additional \$7 per premium channel.

- a. Write an equation in slope-intercept form to represent the total monthly cost. (Use C for total monthly cost and p for premium channel.)

$$C = 7p + 55$$

- b. What would be the monthly charge if 7 premium channels were ordered?

$$C = 7(7) + 55 = \$104$$

- c. A person's monthly bill is \$104. How many premium channels did he order?

$$104 = 7p + 55$$

$$49 = 7p$$

$$7 = p$$

$$\Rightarrow 7 \text{ channels}$$

10. Consider the point (-4, 7).

- a. Give the equation of a vertical line that passes through this point.

$$x = -4$$

- b. Give the equation of a horizontal line that passes through this point.

$$y = 7$$

Remember:
HOY - VUX

11. A restaurant charges \$8 for a hamburger plus an additional charge for each topping. If you order a hamburger with 3 toppings, the total cost will be \$11.75. Write an equation to represent the cost C of a hamburger with t toppings.

Slope? \rightarrow Find rate of change: $\frac{\$3.75}{3 \text{ toppings}} = \$1.25/\text{topping}$

$$C = 1.25t + 8$$