

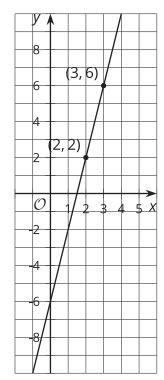
Evaluating Functions over Equal Intervals

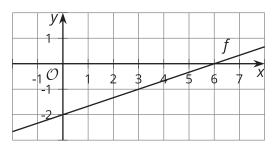
Let's evaluate and rewrite expressions.

20.1

Finding Slopes

- 1. Find the slope of each line.
 - a. The line that passes through (2, 2) and (3, 6).
 - b. The graph of $f(x) = -2 + \frac{1}{3}x$.
- 2. Show on each graph where the slope can be seen.





20.2 Incrementing by One

- 1. For the function f(x) = 3x + 4, evaluate:
 - a. f(0) and f(1)
 - b. f(100) and f(101)
 - c. f(-10) and f(-9)
 - d. f(0.5) and f(1.5)
- 2. What do all those pairs of numbers you found have in common?

3. Write an expression for f(w) and f(w + 1).

- 4. What would you expect to be the result of subtracting f(w) from f(w+1)?
- 5. Subtract f(w) from f(w+1). If you don't get the answer you predicted, work with a partner to check your algebra.

- 6. For the function $g(x) = 2^x$, evaluate:
 - a. g(3) and g(4)
 - b. g(0) and g(1)
 - c. g(-2) and g(-1)
 - d. g(10) and g(11)
- 7. What do all those pairs of numbers you found have in common?

- 8. Write an expression for g(u) and g(u + 1).
- 9. What would you expect to be the result of dividing g(u + 1) by g(u)?
- 10. Divide g(u + 1) by g(u). If you don't get the answer you predicted, work with a partner to check your algebra.

20.3

Rewriting Expressions

1. Evaluate:

a.
$$\frac{3^5}{3^4}$$

b.
$$\frac{3^1}{3^0}$$

c.
$$\frac{3^{-1}}{3^{-2}}$$

d.
$$\frac{3^{100}}{3^{99}}$$

e.
$$\frac{3^{x+1}}{3^x}$$

2. Solve for *m*:

a.
$$\frac{2^m}{2^7} = 2$$

b.
$$\frac{2^{100}}{2^m} = 2$$

c.
$$\frac{2^m}{2^x} = 2$$

3. Write an equivalent expression using as few terms as possible:

a.
$$3(x+1)+4-(3x+4)$$

b.
$$2(x+1) + 5 - (2x+5)$$

c.
$$2(x+2) + 5 - (2(x+1) + 5)$$

d.
$$-5(x+1) + 3 - (-5x+3)$$

e.
$$\frac{5^{x+1}}{5^x}$$

f.
$$\frac{7^{x+4}}{7^x}$$