

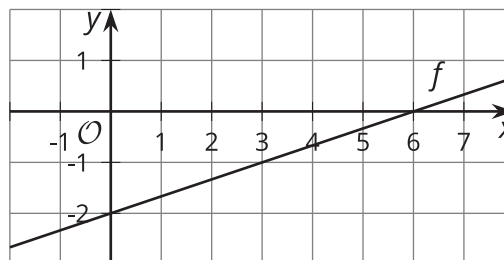
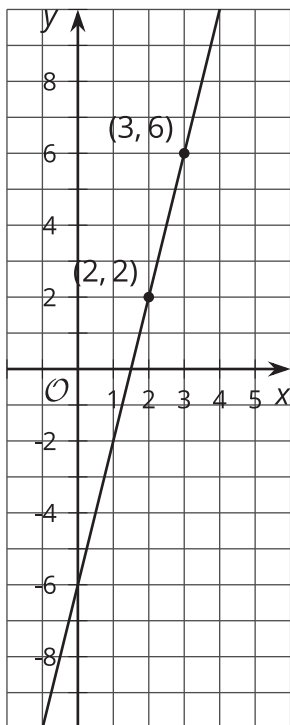


Evaluating Functions over Equal Intervals

Let's evaluate and rewrite expressions.

23.1 Finding Slopes

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



23.2

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:
- $g(3)$ and $g(4)$
 - $g(0)$ and $g(1)$
 - $g(-2)$ and $g(-1)$
 - $g(10)$ 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.



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

