Lesson 12: Connections between Graphs and Equations

- Let's examine some situations, equations, and graphs.

12.1: Math Talk: Evaluating a Function

Here is a function: $g(x) = 100 - 5x$

Evaluate mentally:

$g(0)$

$g(1)$

$g(4)$

$g(20)$

12.2: Bank Accounts

Each function represents the amount in a bank account after t weeks.

$A(t) = 500$ $B(t) = 500 + 40t$ $C(t) = 500 - 40t$

$D(t) = 500 \cdot (1.5)^t$ $E(t) = 500 \cdot (0.75)^t$

1. Make a table for each bank account showing the money in the account at 0, 1, 2, and 3 weeks.

2. Describe in words how the money in the account is changing week by week.

3. Use technology to create a graph of each function. How can you see your description in each graph?

12.3: Build a New Function

Consider the same five functions:

$A(t) = 500$ $B(t) = 500 + 40t$ $C(t) = 500 - 40t$

$D(t) = 500 \cdot (1.5)^t$ $E(t) = 500 \cdot (0.75)^t$

1. Starting with one of the functions, change it so that it represents an account that . . .
   a. Starts with a balance of \$300, and loses \$40 each week.

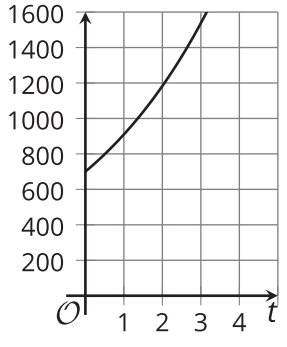
   b. Starts with a balance of \$500, and gains \$15 each week.

   c. Starts with a balance of \$500, and loses $\frac{1}{10}$ of its value each week.

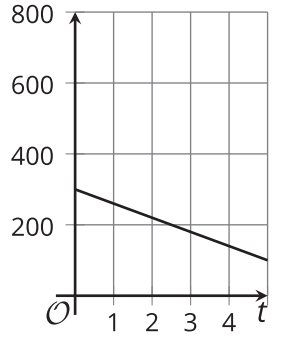
   d. Starts with a balance of \$700, and gains $\frac{3}{10}$ of its value each week.

2. Here are four graphs. Which graph matches each of your new equations?

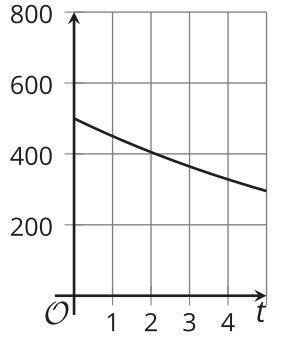
graph 1



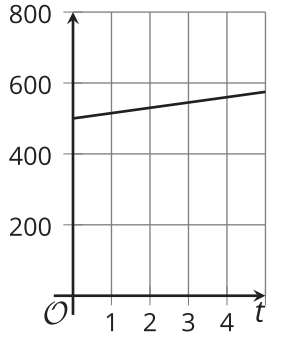
graph 2



graph 3



graph 4



3. To check, use technology to graph your equations. Make sure to use the same graphing window. Check that the graph of your equation matches the graph you chose.