



# 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.

| $t$ | $A(t)$ |
|-----|--------|
| 0   |        |
| 1   |        |
| 2   |        |
| 3   |        |

| $t$ | $B(t)$ |
|-----|--------|
| 0   |        |
| 1   |        |
| 2   |        |
| 3   |        |

| $t$ | $C(t)$ |
|-----|--------|
| 0   |        |
| 1   |        |
| 2   |        |
| 3   |        |

| $t$ | $D(t)$ |
|-----|--------|
| 0   |        |
| 1   |        |
| 2   |        |
| 3   |        |

| $t$ | $E(t)$ |
|-----|--------|
| 0   |        |
| 1   |        |
| 2   |        |
| 3   |        |

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:

$$A(t) = 500$$

$$B(t) = 500 + 40t$$

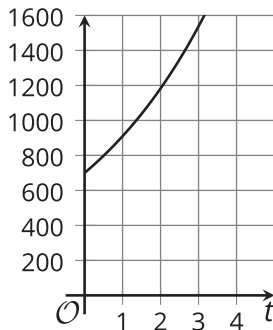
$$C(t) = 500 - 40t$$

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

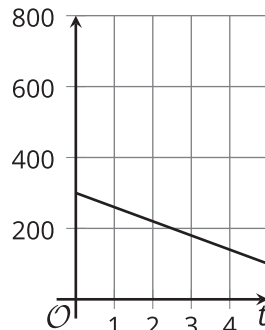
$$E(t) = 500 \cdot (0.75)^t$$

- For each of the following descriptions, choose a different function from the given list and change it so it matches the description.
  - starts with a balance of \$300 and loses \$40 each week
  - starts with a balance of \$500 and gains \$15 each week
  - starts with a balance of \$500 and loses  $\frac{1}{10}$  of its value each week
  - starts with a balance of \$700 and gains  $\frac{3}{10}$  of its value each week
- Here are four graphs. For each of your new equations, choose a graph that matches it. Explain your reasoning.

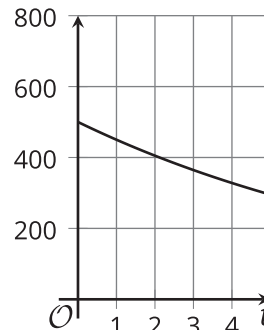
graph 1



graph 2



graph 3



graph 4

