Connections between Graphs and Equations

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

15.1   Math Talk: Evaluating a Function

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

Evaluate mentally:

- $g(0)$

- $g(1)$

- $g(4)$

- $g(20)$

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?

Consider the same five functions:
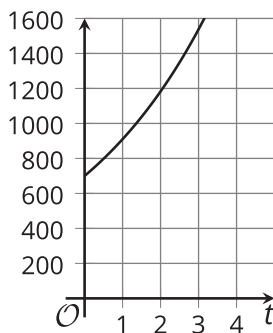
$$A(t) = 500 \qquad B(t) = 500 + 40t \qquad C(t) = 500 - 40t$$
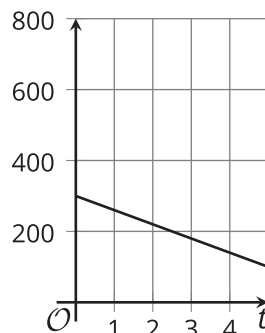
$$D(t) = 500 \cdot (1.5)^t \qquad E(t) = 500 \cdot (0.75)^t$$

1. For each of the following descriptions, choose a different function from the given list and change it so it matches the description.

    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

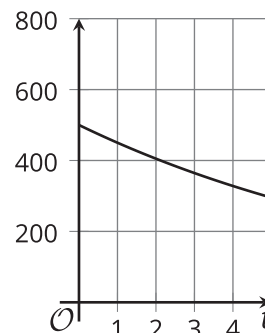2. Here are four graphs. For each of your new equations, choose a graph that matches it. Explain your reasoning.

graph 1

graph 2

graph 3

graph 4