

**Rate of Change:
Linear,
Exponential,
& Quadratic
Functions**

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Instructions

Print or copy page 3 and 4 double sided.

Place the paper so the examples are face down.

Fold inwards on the solid line so the 3 function boxes are above the
Rate of Change.

Cut along the dotted lines to create flaps.

Glue the foldable into notes or on a piece of construction paper.

Go through the foldable with your students.

Review

**Linear
Functions**

**Exponential
Functions**

**Quadratic
Functions**

Linear Function

$$y = mx + b$$

Exponential Function

$$y = ab^x$$

Quadratic Function

$$y = ax^2 + bx + c$$

Graph $f(x) = x + 2$

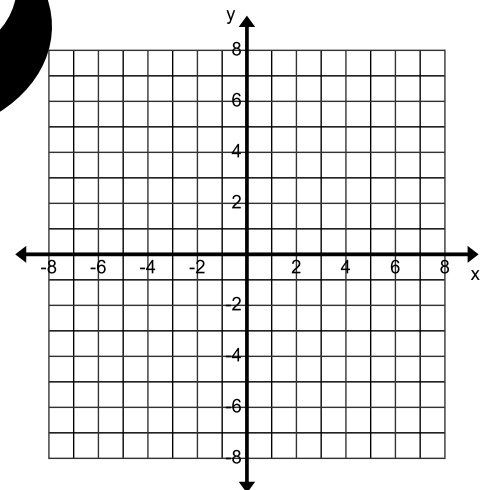
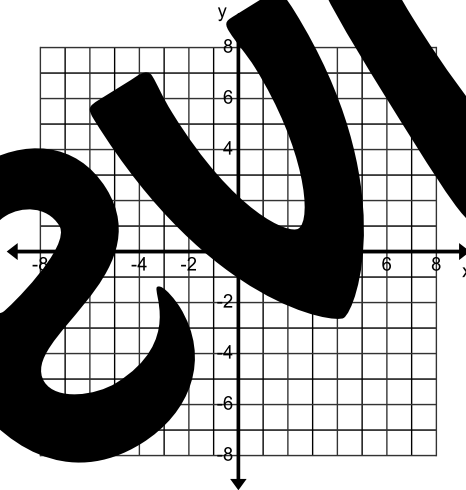
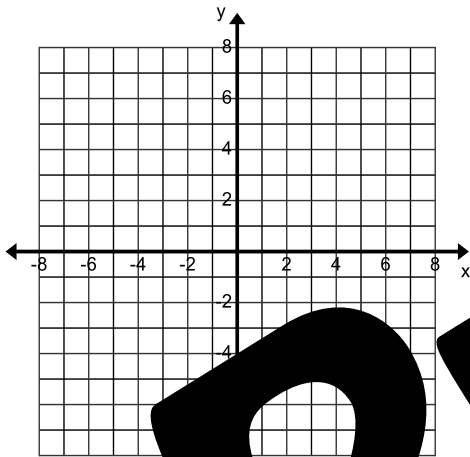
x	$f(x) = x + 2$	y
-2		
-1		
0		
1		
2		

Graph $g(x) = 2(2)^x$

x	$g(x) = 2(2)^x$	y
-2		
-1		
0		
1		
2		

Graph $h(x) = x^2 + 3$

x	$h(x) = x^2 + 3$	y
-2		
-1		
0		
1		
2		



Coordinates (0, 2) and (2, 4)

Coordinates (0, 2) and (2, 8)

Coordinates (0, 3) and (2, 7)

$$m = \frac{\text{change in } y}{\text{change in } x}$$

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Rate of Change

Which function grows the fastest on the interval [0, 2]?

Preview

**Linear
Functions**

**Exponential
Functions**

**Quadratic
Functions**

Linear Function

$$y = mx + b$$

Exponential Function

$$y = ab^x$$

Quadratic Function

$$y = ax^2 + bx + c$$

Graph $f(x) = x + 2$

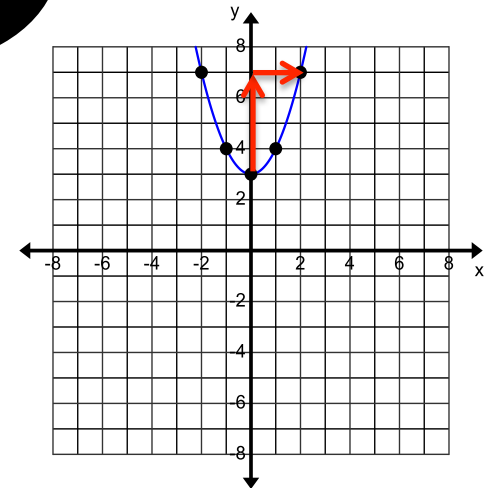
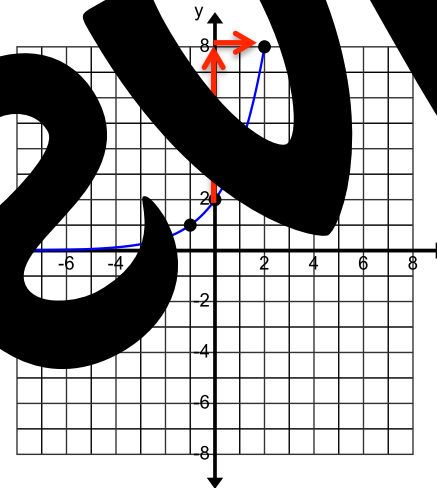
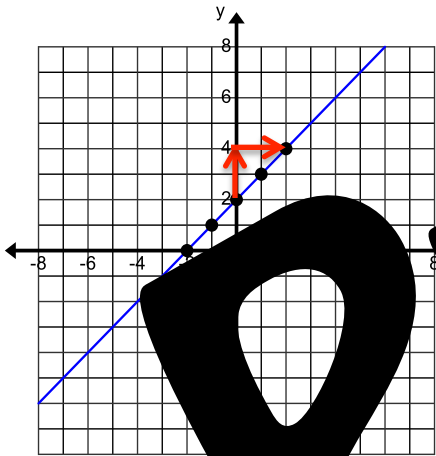
x	$f(x) = x + 2$	y
-2	$-2 + 2$	0
-1	$-1 + 2$	1
0	$0 + 2$	2
1	$1 + 2$	3
2	$2 + 2$	4

Graph $g(x) = 2(2)^x$

x	$g(x) = 2(2)^x$	y
-2	$2(2)^{-2} = 2(1/4)$	1/2
-1	$2(2)^{-1} = 2(1/2)$	1
0	$2(2)^0 = 2$	2
1	$2(2)^1 = 2(2)$	4
2	$2(2)^2 = 2(4)$	8

Graph $h(x) = x^2 + 3$

x	$h(x) = x^2 + 3$	y
-2	$(-2)^2 + 3 = 4 + 3$	7
-1	$(-1)^2 + 3 = 1 + 3$	4
0	$(0)^2 + 3 = 0 + 3$	3
1	$(1)^2 + 3 = 1 + 3$	4
2	$(2)^2 + 3 = 4 + 3$	7



Coordinates (0, 2) and (2, 4)

$$m = \frac{\text{change in } y}{\text{change in } x} = \frac{4 - 2}{2 - 0} = \frac{2}{2} = 1$$

Coordinates (0, 2) and (2, 8)

$$m = \frac{\text{change in } y}{\text{change in } x} = \frac{8 - 2}{2 - 0} = \frac{6}{2} = 3$$

Coordinates (0, 3) and (2, 7)

$$m = \frac{\text{change in } y}{\text{change in } x} = \frac{7 - 3}{2 - 0} = \frac{4}{2} = 2$$

Rate of Change

Which function grows the fastest on the interval [0, 2]?