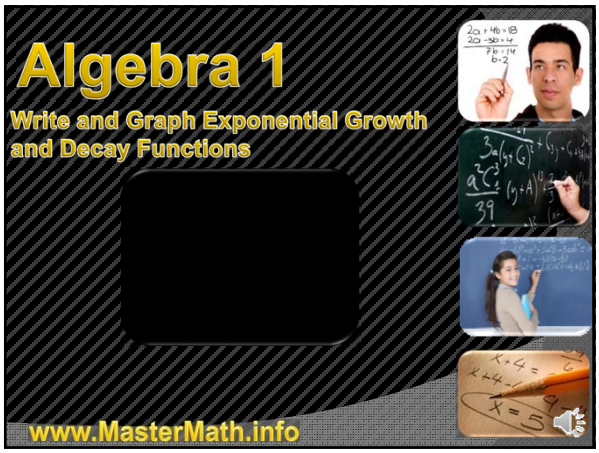
Algebra 1
Write and Graph Exponential Growth and Decay Functions
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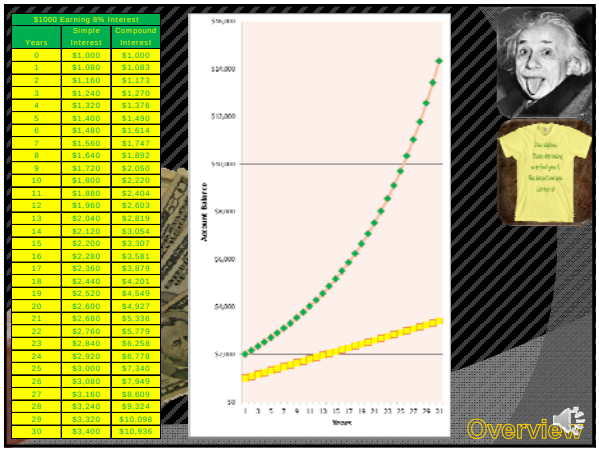
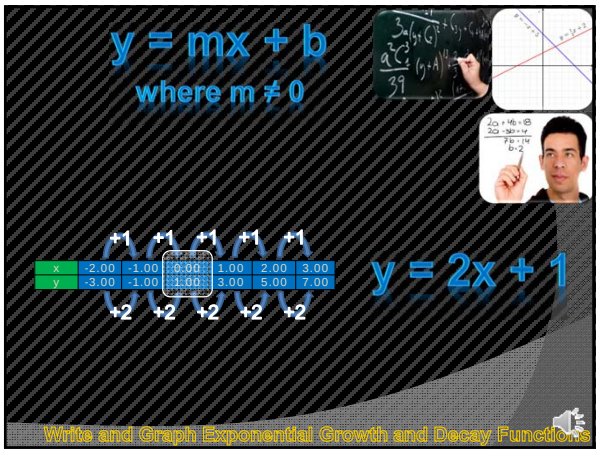
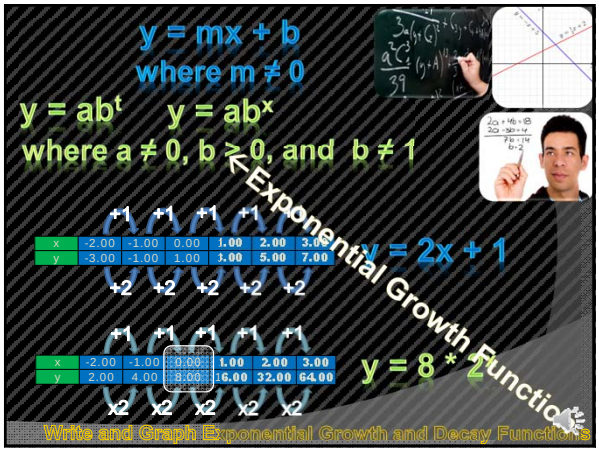
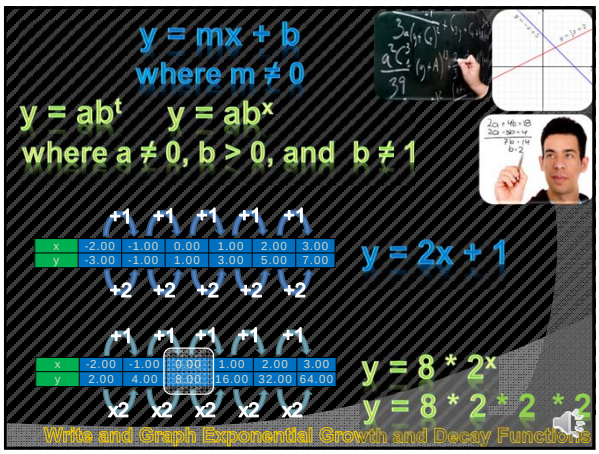

$1000 Earning 8% Interest
Years
Simple Interest
Compound Interest
0 $1,000 $1,000
1 $1,080 $1,083
2 $1,160 $1,173
3 $1,240 $1,270
4 $1,320 $1,376
5 $1,400 $1,490
6 $1,480 $1,614
7 $1,560 $1,747
8 $1,640 $1,892
9 $1,720 $2,050
10 $1,800 $2,220
11 $1,880 $2,404
12 $1,960 $2,603
13 $2,040 $2,819
14 $2,120 $3,054
15 $2,200 $3,307
16 $2,280 $3,581
17 $2,360 $3,879
18 $2,440 $4,201
19 $2,520 $4,549
20 $2,600 $4,927
21 $2,680 $5,336
22 $2,760 $5,779
23 $2,840 $6,259
24 $2,920 $6,778
25 $3,000 $7,340
26 $3,080 $7,949
27 $3,160 $8,609
28 $3,240 $9,324
29 $3,320 $10,098
30 $3,400 $10,936
Account Balance
Years
Overview

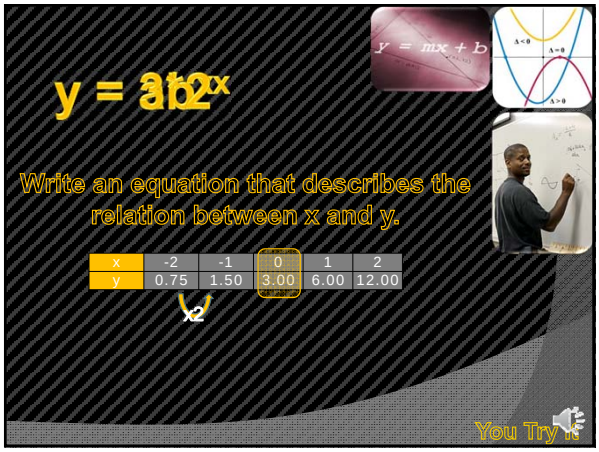

Exponential Growth Functions
Exponential Decay Functions
Write and Graph Exponential Functions
Overview

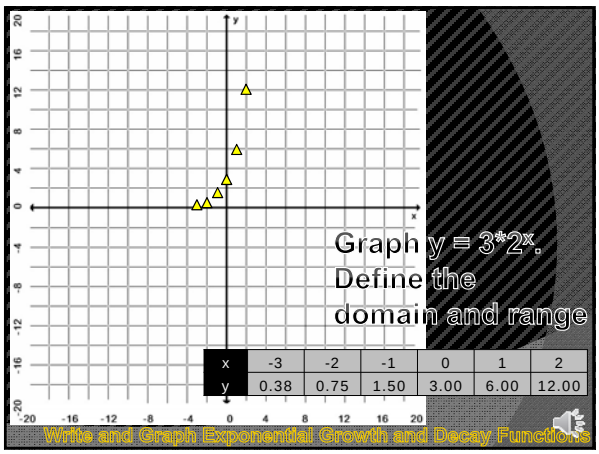

y = mx + b
where m ≠ 0
+1 +1 +1 +1 +1
x -2.00 -1.00 0.00 1.00 2.00 3.00
y -3.00 -1.00 1.00 3.00 5.00 7.00
+2 +2 +2 +2 +2
y = 2x + 1
Write and Graph Exponential Growth and Decay Functions

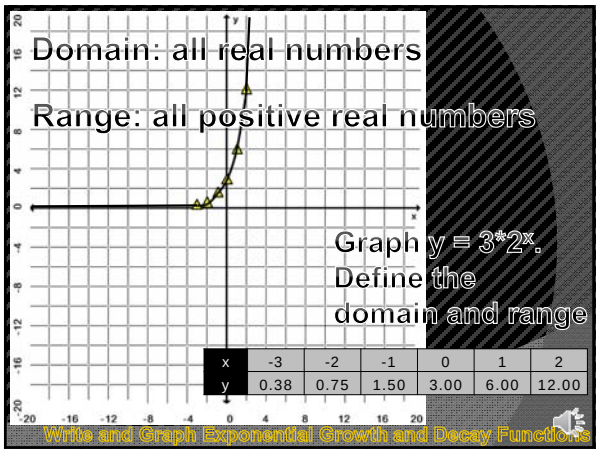

y = mx + b
where m ≠ 0
y = ab^t y = ab^x
where a ≠ 0, b > 0, and b ≠ 1
Exponential Growth Function
+1 +1 +1 +1 +1
x -2.00 -1.00 0.00 1.00 2.00 3.00
y -3.00 -1.00 1.00 3.00 5.00 7.00
+2 +2 +2 +2 +2
y = 2x + 1
+1 +1 +1 +1 +1
x -2.00 -1.00 0.00 1.00 2.00 3.00
y 2.00 4.00 8.00 16.00 32.00 64.00
x2 x2 x2 x2 x2
y = 8 * 2
Write and Graph Exponential Growth and Decay Functions

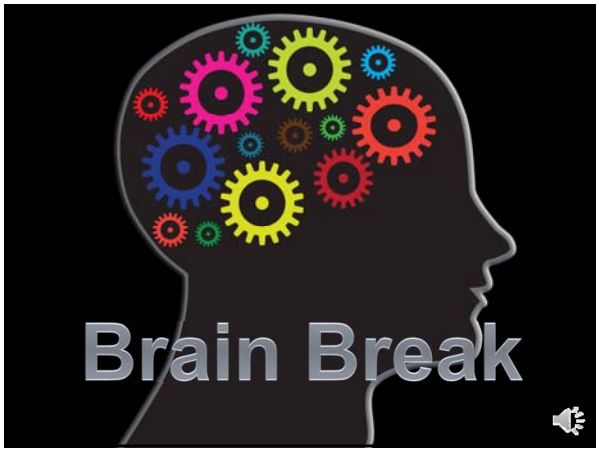

y = mx + b
where m ≠ 0
y = ab^t y = ab^x
where a ≠ 0, b > 0, and b ≠ 1
+1 +1 +1 +1 +1
x -2.00 -1.00 0.00 1.00 2.00 3.00
y -3.00 -1.00 1.00 3.00 5.00 7.00
+2 +2 +2 +2 +2
y = 2x + 1
+1 +1 +1 +1 +1
x -2.00 -1.00 0.00 1.00 2.00 3.00
y 2.00 4.00 8.00 16.00 32.00 64.00
x2 x2 x2 x2 x2
y = 8 * 2^x
y = 8 * 2 * 2 * 2
Write and Graph Exponential Growth and Decay Functions

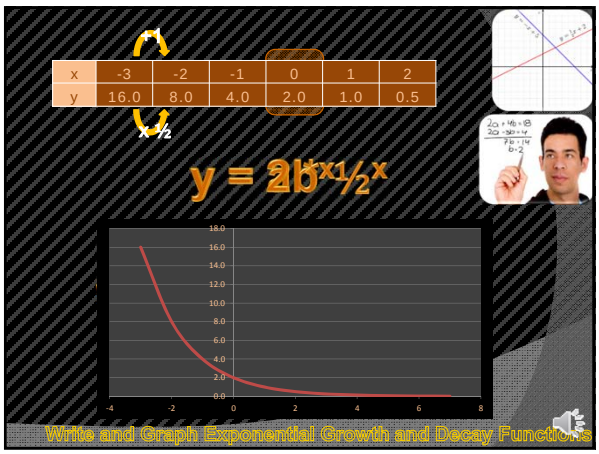

Write an equation that describes the relation between x and y.
x -2 -1 0 1 2
y 0.75 1.50 3.00 6.00 12.00
You Try !!

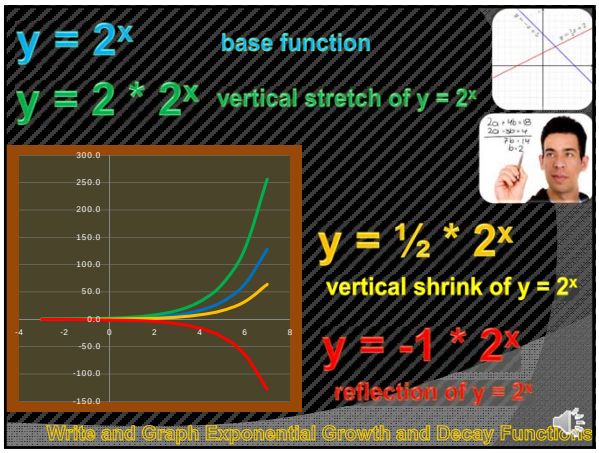

y = ab^x
Write an equation that describes the relation between x and y.
x -2 -1 0 1 2
y 0.75 1.50 3.00 6.00 12.00
x2
You Try !!

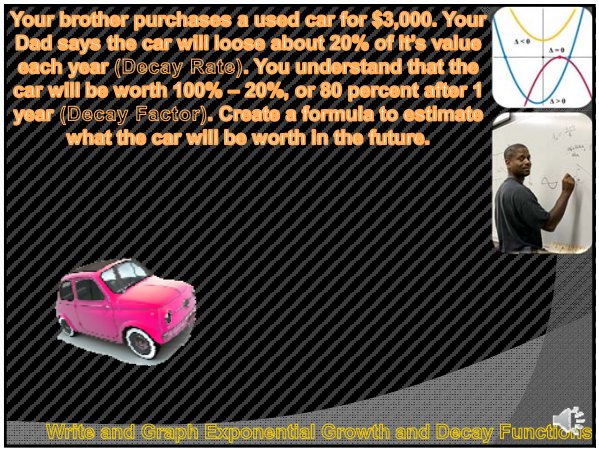

Graph y = 3*2^x. Define the domain and range
x -3 -2 -1 0 1 2
y 0.38 0.75 1.50 3.00 6.00 12.00
Write and Graph Exponential Growth and Decay Functions

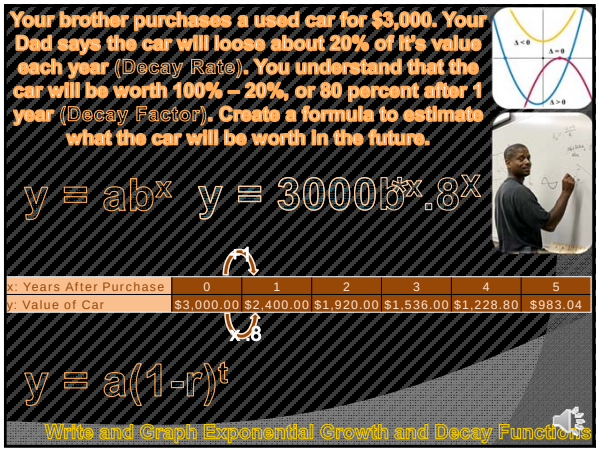

Domain: all real numbers
Range: all positive real numbers
Graph y = 3*2^x.
Define the
domain and range
x -3 -2 -1 0 1 2
y 0.38 0.75 1.50 3.00 6.00 12.00
Write and Graph Exponential Growth and Decay Functions


Brain Break

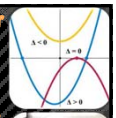

x -3 -2 -1 0 1 2
y 16.0 8.0 4.0 2.0 1.0 0.5
x ½
y = 2b^x ½^x
Write and Graph Exponential Growth and Decay Functions


y = 2^x
base function
y = 2 * 2^x
vertical stretch of y = 2^x
y = ½ * 2^x
vertical shrink of y = 2^x
y = -1 * 2^x
reflection of y = 2^x
Write and Graph Exponential Growth and Decay Functions


Your brother purchases a used car for $3,000. Your Dad says the car will loose about 20% of it's value each year (Decay Rate). You understand that the car will be worth 100% – 20%, or 80 percent after 1 year (Decay Factor). Create a formula to estimate what the car will be worth in the future.
Write and Graph Exponential Growth and Decay Functions


Your brother purchases a used car for $3,000. Your Dad says the car will loose about 20% of it's value each year (Decay Rate). You understand that the car will be worth 100% – 20%, or 80 percent after 1 year (Decay Factor). Create a formula to estimate what the car will be worth in the future.
y = ab^x
y = 3000b^x
.8^x
x: Years After Purchase
y: Value of Car
0
1
2
3
4
5
$3,000.00
$2,400.00
$1,920.00
$1,536.00
$1,228.80
$983.04
x.8
y = a(1-r)^t
Write and Graph Exponential Growth and Decay Functions

Your brother purchases a used car for $3,000. Your Dad says the car will loose about 20% of it's value each year (Decay Rate). You understand that the car will be worth 100% – 20%, or 80 percent after 1 year (Decay Factor). Create a formula to estimate what the car will be worth in the future.

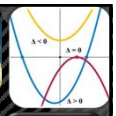


$y = ab^x$

$y = 3000 * .8^x$

$y = a(1-r)^t$

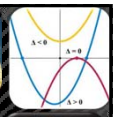
Write and Graph Exponential Growth and Decay Functions



Each year Patulack City Parks and Rec sponsors a tennis tournament. Play starts with 128 participants. Each day, 50% of the players are eliminated. How many players remain after 5 days?

You Try It

$y = ab^x$ $y = a(1-r)^t$



$y = 128(.5)^t$

Each year Patulack City Parks and Rec sponsors a tennis tournament. Play starts with 128 participants. Each day, 50% of the players are eliminated. How many players remain after 5 days?

You Try It