

2.1 Exponential Properties

Apr 7-6:53 AM

Exponential Form:

$$y = b^x$$

Parent function

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1. When b was bigger than 0
($b > 0$)
 - growing (increasing)
2. When b was in between zero and 1
($0 < b < 1$)
 - decreases (decays)

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Exponential Growth:
as the value of x increases, the
value of y increases

Exponential Decay:
as the value of x increases, the
value of y decreases

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Asymptote:

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Growth Factor:
the value of $b > 1$
(greater than one)

~~Growth~~ Decay Factor:
 $0 < b < 1$ the value of b (all fractions
↓
decimals)

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$$A(t) = a(1 + r)^t$$

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You invested \$1000 in a savings account at the end of the 6th grade. The account pays 5% annual interest. How much money will be in the account after six years?

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Suppose you invest \$500 in a savings account that pays 3.5% annual interest. How much will be in the account after five years?

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Suppose you invest \$1000 in a savings account that pays 5% annual interest. If you make no additional deposits or withdrawals, how many years will it take for the account to grow to at least \$1500?

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The factor a in $y = ab^x$ can stretch or compress, and possibly reflect the graph of the parent function $y = b^x$

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Graph both functions. Compare your results.

X	Y
0	$2^{(0)}$ 1
1	$2^{(1)}$ 2
2	2^2 4
3	2^3 8

X	Y
0	$(3)(2)^0$ 3
1	$3(2)^1$ 6
2	$3(2)^2$ 12
3	$3(2)^3$ 24

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$y = -\frac{1}{3} \cdot 3^x$ compare to the graph of the parent function

X	Y
-2	.11
-1	.33
0	1
1	3
2	9

X	Y
-2	
-1	
0	
1	
2	

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1. What number does b have to be in order to have exponential growth?

2. Is the function going to have growth or decay?

$$y = \left(\frac{1}{2}\right)4^x$$

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$y = 4^x$ $y = \left(\frac{1}{2}\right)4^x$

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