Algebra 1 Bellwork Thursday, April 7, 2016

1. Use each percent change to find the base of an exponential equation.

a) 19.8% increase. b =

b) 7.043% decrease. b =

2. State the percent change each exponential equation represents and whether it's an increase or a decrease.

a) $y = 418(0.6075)^x$

% change =

inc or dec?

b) $y = 9000(1.4302)^x$

% change =

inc or dec?

3. Does each exponential equation represent Growth or Decay?

a) $y = 10{,}000(0.9937)^x$ b) $y = 23\left(\frac{42}{39}\right)^{-x}$ c) $y = 757(1.3000042)^x$

4. The value of a business as been decreasing 2.9% each year. The value in 2009 was $2,500,000.

a) Find the value of the business in 2016.

b) Find the value of the business in 2000.

5. When a couple's first child is born they invest $10,000 in an account that pays 8% interest annually. How much will be in the account when the child turns 18 years old?

Algebra 1 Bellwork Thursday, April 7, 2016 [Answers]

1. Use each percent change to find the base of an exponential equation.

a) 19.8% inccrease. b = 1.198

100 + 19.8 = 119.8% → 1.198

b) ~~30.43% increase.~~ b = 0.9295

7.043 % decrease

100 − 7.043 = 92.957 %

2. State the percent change each exponential equation represents and whether it's an increase or a decrease.

a) $y = 418(0.6075)^x$

% change = 39.25%

inc or dec? DEC

.6075 × 100 = 60.75 − 100 = −39.25

b) $y = 9000(1.4302)^x$

% change = 43.02%

inc or dec? INC

1.4302 × 100 = 143.02 − 100 = 43.02

3. Does each exponential equation represent Growth or Decay?

a) $y = 10,000(0.9937)^x$ 0<b<1 DECAY

b) $y = 23\left(\frac{42}{39}\right)^{-x}$ DECAY $\left(\frac{39}{42}\right)^x$ 0<b<1

c) $y = 757(1.3000042)^x$ b>1 Growth

4. The value of a business as been decreasing 2.9% each year. The value in 2009 was $2,500,000.

a) Find the value of the business in 2016.

base: b = 100 − 2.9 = 97.1%

b = .971

$y = 2,500,000(.971)^x$

x = 2016 − 2009 = 7

$y = 2,500,000(.971)^7$

$2,034,579.28

b) Find the value of the business in 2000.

x = 2000 − 2009 = −9

$y = 2,500,000(.971)^{-9}$

$3,258,118.98

5. When a couples first child is born they invest $10,000 in an account that pays 8% interest annually. How much will be in the account when the child turns 18 years old?

base: 100 + 8 = 108%

b = 1.08

$y = 10,000(1.08)^x$

x = 18

$y = 10,000(1.08)^{18}$

$39,960.19