

Exponential
 1. The population of Pointe Claire can be modeled by the formula: $P = 31380(1.04)^x$, where x is the number of years that have passed since Jan 1, 2016.

a) What was the initial population in 2016? $= 31380$

b) According to the formula, by what percentage should the population increase each year?

c) What might the population of Pointe Claire be in 2020?

$y = ac^x$

$C = 1.04 \rightarrow 4\%$

$4\% = 0.04$

$\frac{4}{100} = 0.04$

$y = 31380(1)^2 = 31380$

$y = 31380(1.04)^2 = 32208$

$(1 + 0.04) = 1.04$

$y = 31380(1.04)^4$

$y = 36710.16$

Mar 25-9:12 AM

2. After working all summer, 16 year-old Joy decides to invest \$3500 in a savings account. The savings account earns 8% interest, annually.

How much money will Joy have in that savings account when she retires at age 60?

$x = 44 \text{ years}$

$y = 3500(1.08)^{44}$

$y = 103445.9$

Answer: At age 60, the savings account will have \$ _____ in it.

Mar 25-9:12 AM

A car typically loses 11% of its value every year.
 A brand new Honda Civic costs \$23,940. = a

How much will the car be worth in 5 years?

$11\% = 0.11$

$1 - 0.11 = 0.89$

$y = 23940(0.89)^5$

$y = 13368.2$

Answer: The car will be worth \$ _____ after 5 years.

Mar 25-9:13 AM

Scientists have identified a severe fungal infection affecting cherry trees in North America. If left untreated, estimates are that this infection could cause half of all living trees to die every month. Presuming these estimates are correct and that there are 10,000,000 healthy cherry trees currently in North America, how many cherry trees would be left after one full year?

$x = 12$

$\frac{x}{12} = 50 = 0.5$

$C = 1 - 0.5 = 0.5$

$a = 10,000,000$

$y = (10,000,000)(0.5)^{12}$

$y = 241.4$

Answer: There will be _____ trees left after 12 months

Mar 25-9:14 AM

The zombie apocalypse has begun. 3 zombies are created in a lab and get loose into the world. Once they are out, the number of zombies doubles every three hours. How many zombies are there after 2 full days (48 hours)?

$y = ac^x$

$y = 3(2)^x$

$y = 3(2)^{16}$

$y = 3(65536)$

$y = 196608$

$\frac{48}{3} = 16 = x$

Answer: There will be _____ zombies after 48 hours.

Mar 25-9:14 AM

Sean purchased a house for an unknown amount of money in 1990. Since that time, the value of the house has increased by 4.5% per year, every year. In 2017 the house is worth \$377,431.10. How much did Sean pay for the house in 1990?

$y = ac^x$

$y = a(1.045)^x$

$377431.10 = a(1.045)^{27}$

$\frac{377431.10}{3.28} = a(1.045)^{27}$

$\frac{377431.10}{3.28} = 115070.46$

Answer: In 1990, the house was worth \$ _____

Mar 25-9:16 AM

Sia buys a cell phone for \$ 1150.00 in 2016
 The phone loses 24 percent of its value every year.
 a) After how many years will the value of Sia's phone first drop below \$ 250?
 b) What year will it be?

$$1 - 0.24 = 0.76 = c$$

$$y = 1150(0.76)^x$$

$$250 = 1150(0.76)^x$$

} 0.76^5

Answer:
 a) The value of Sia's phone will first drop below \$ 250 after 6 years.
 b) The year that this happens will be 2022

Mar 25-9:17 AM

How to find missing exponent on calculator

$$x \log 3 = \log 27$$

$$x = \frac{\log 27}{\log 3}$$

(log)

Apr 2-10:17 AM

The population of a certain type of tiger is decreasing as the species goes extinct. This can be represented by the function rule $P(t) = 110(0.8)^t$ where t represents the time elapsed in years and $P(t)$ represents the total population.

If there are currently 110 tigers, estimate the number of years before only half the population remains.

$$55 = 110(0.8)^x$$

$$70 = 110(0.8)^2$$

$$56.3 = 110(0.8)^3 = 45$$

$$55 = 110(0.8)^x$$

$$\frac{55}{110} = \frac{110}{110} (0.8)^x$$

$$0.5 = 1(0.8)^x$$

$$x = 3.1$$

Kurtis recently purchased a moped for \$850, but knows that the value of the moped will decrease over time. This can be represented by the function rule $V(t) = 850(0.75)^t$ where t represents the time elapsed in years and $V(t)$ represents the value of the moped in dollars.

Estimate the number of years it will take for Kurtis' moped to be worth only half its purchase value.

$$425 = 850(0.75)^x$$

$$\frac{425}{850} = \frac{850}{850} (0.75)^x$$

$$0.5 = 1(0.75)^x$$

When his daughter was born, Marlon opened a savings account in her name. The account grows each year by collecting interest, as represented by the function rule $S(t) = 2200(1.08)^t$ where t represents the time elapsed in years and $S(t)$ represents the account total in dollars.

Estimate the number of years before the savings account reaches a total of \$3500.

Mar 25-9:17 AM