DO NOW

Decide whether the table represents a linear or exponential function. Then, write the function formula.

x	0	1	2	3	4
y	12	8	4	0	-4

Linear or Exponential? y = $-4x+12$

Jan 2-1:01 PM

Homework Answers

A) Linear

y = 3x + 7

B) Exponential

$y = 2(3)^x$

C) Exponential

$y = 8\left(\frac{1}{2}\right)^x$

D) Linear

y=-16x

E) Exponential

$y = 16\left(\frac{5}{4}\right)^x$

x	0	1	2
y	16	20	25

$1.25 \leftarrow \frac{20}{16}$

F) Linear

y = -20x + 180

2) 1

Feb 4-6:58 AM

Exponenal growth -- when a quanty increases by a certain factor over me.

EX: compound interest or populaon increase

To find exponenal growth use the formula:

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

'a' is the inial amount

'r' is the rate expressed as a decimal

't' is the # of me intervals

Jan 2-11:45 AM

Kyra deposits $1000 into an account that pays 5% compound interest. How much will Kyra have in her account aer 5 years?

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

$a = 1000$

$r = 5\% \rightarrow .05$

$t = 5 \text{ years}$

$f(5) = 1000(1+.05)^5$

$= 1000(1.05)^5$

$1276.2815..$

$\$1276.28$

Jan 7-12:51 PM

Exponenal decay -- a quanty decreases by a certain factor over me

EX: a car's value depreciang (going down) over me.

Use the formula to find exponenal decay:

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

EX: If your parents buy a car for $25,000 and it depreciates at a rate of 12% each year, you can find the car's value aer 5 years using the formula above.

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

$a=25000$

$r=12\% \rightarrow .12$

$t=5$

$f(5)=25000(1-.12)^5$

$f(5)=25000(.88)^5$

$=13193.297..$

$\$13,193.30$

Jan 2-11:53 AM

1. The original value of an investment is $1400 and the value increases by 9% each year. Find the value of the investment aer 25 years.

$a=1400$

$r=.09$

$t=25$

$f(25)=1400(1+.09)^{25}$

$=1400(1+.09)^{25}$

$=12072.31292$

$\$12,072.31$

2. In 1985, there were 285 cell-phone subscribers in Mayville. The number of subscribers increased by 7.5% per year aer 1985. How many cell-phone subscribers were there in 2008?

$f(23)=285(1+0.075)^{23}$

$1,503.97$

1503 subscribers

$2008 - 1985 = 23$

Jan 2-12:04 PM

Tell whether the funcon is an exponenal growth funcon or exponenal decay funcon, and find the constant percentage rate of growth.

Exercise 3: $P(t)= 3.5(1.09)^t$

a. Exponenal Decay, 3.5%
b. Exponenal Decay, 9%
c. Exponenal Growth, 9%
d. Exponenal Growth, .09%

Exercise 4: $P(x) = 200(.85)^x$

a. Exponenal Decay, 85%
b. Exponenal Decay, 15%
c. Exponenal Growth, 85%
d. Exponenal Growth, 200%

Jan 30-9:41 AM