Answer on Question #57170 – Math – Calculus

Question

If $1,000 is invested in an account that pays 3% interest compounded annually, an expression that represents the amount in the account at the end of two years can be given by which of the following equations?

A:1000(1.03)^2
B:1000(0.3)^2
C: 1000 + 0.2^3

Solution

If A$ is invested in an account that pays p% interest compounded annually, an expression that represents the amount in the account at the end of n years can be given by the following formula

$$A_n = A \cdot \left(1 + \frac{p}{100}\right)^n.$$

If $A = 1000$, $p = 3\%$ and $n = 2$, then $A_n = 1000 \cdot 1.03^2$.

Answer: A: $1000 \cdot 1.03^2$.

Question

Which of the following could be an example of a function with a domain $(-\infty, \infty)$ and a range $(-\infty, 4)$?
Check all that apply

y=- (3)^x - 4

y = - (0.25)^x - 4

y = - (0.025)^x + 4

y = - (3)^x + 4

Solution

The function $y = a^x$, where $a > 0, a \neq 1$, has a domain $(-\infty, \infty)$ and a range $(0, \infty)$. Then the function $y = -a^x$, where $a > 0, a \neq 1$, has a domain $(-\infty, \infty)$ and a range $(-\infty, 0)$.
Therefore the functions $y = -3^x - 4$ and $y = -0.25^x - 4$ have a domain $(-\infty, \infty)$ and a range $(-\infty, -4)$. The functions $y = -3^x + 4$ and $y = -0.025^x + 4$ have a domain $(-\infty, \infty)$ and a range $(-\infty, 4)$.

Answer: the functions with a domain $(-\infty, \infty)$ and a range $(-\infty, 4)$ are $y = -0.025^x + 4$ and $y = -3^x + 4$.