Answer on Question #57037 – Math – Algebra

Question

19. Air pressure may be represented as a function of height (in meters) above the surface of the earth, as shown below.

$P(h) = P_0 \cdot e^{-0.00012h}$

In this function, Po is the air pressure at the surface of the earth, and h is the height above the surface of the earth, measured in meters. At what height will the air pressure equal 50% of the air pressure at the surface of the Earth?

A: 0.59 m
B: 5776.2 m
C: 2148.9 m
D: 4166.7 m

Solution

$P(h) = 0.5P_0$

$0.5P_0 = P_0 \cdot e^{-0.00012h}$

$e^{0.00012h} = 2$

$e^{0.00012h} = e^{\ln(2)}$

$0.00012h = \ln(2)$

$h = \dfrac{\ln(2)}{0.00012} = 5776.23$

Answer: B: 5776.2 m.

Question

20. If you were to place $5,000 in savings account that pays 6% interest compounded continuously, how much money will you have after 4 years? Assume you make no other deposits or withdraws.

A: $5,024
B: $11,821.07
C: $6,356.25
D: $6,312.38

Solution

Apply the formula as follows

$$A = Pe^{rt},$$

where

$P =$ principal amount (initial investment)

$r =$ annual interest rate (as a decimal)

$t =$ number of years

$A =$ amount after time t

$A = 5000e^{0.06 \cdot 4} = 6{,}356.25.$

Answer: C: $6,356.25.