

Answer on Question #56684 – Math – Algebra

9. If your starting salary were \$40,000 and you received a 3% increase at the end of every year for 15 years, what would be the total amount, in dollars, you would have earned over the first 16 years that you worked?

Round your answer to the nearest whole dollar, and express your answer without using commas.

Solution

$$T = 40000 + 40000(1.03) + 40000(1.03)^2 + \dots + 40000(1.03)^{15}$$

Multiplying the above equation by 1.03 gives

$$1.03 \cdot T = 40000(1.03) + 40000(1.03)^2 + 40000(1.03)^3 + \dots + 40000(1.03)^{15} + 40000(1.03)^{16}$$

Now subtract the first equation from the second and obtain

$$0.03T = 40000(1.03)^{16} - 40000$$

$$0.03T = 40000(1.03^{16} - 1)$$

$$0.03T = 24188.26$$

$$T = 24188.26 / 0.03 = \$806275.25$$

Answer: \$806275.

10. In a geometric sequence, the term a_{n+1} can be smaller than the term a_n .

A: False

B: True

Answer: B: True. For example, $a_n = \frac{1}{2^n}$, $n \geq 1$.