

49.

Happy and financially astute parents decide at the birth of their daughter that they will need to provide 50,000 at each of their daughter's 18th, 19th, 20th and 21st birthdays to fund her college education. They plan to contribute X at each of their daughter's 1st through 17th birthdays to fund the four 50,000 withdrawals. If they anticipate earning a constant 5% annual effective rate on their contributions, which the following equations of value can be used to determine X, assuming compound interest?

(A) $X[v_{.05}^1 + v_{.05}^2 + \dots + v_{.05}^{17}] = 50,000[v_{.05}^1 + \dots + v_{.05}^4]$

(B) $X[(1.05)^{16} + (1.05)^{15} + \dots + (1.05)^1] = 50,000[1 + \dots + v_{.05}^3]$

(C) $X[(1.05)^{17} + (1.05)^{16} + \dots + 1] = 50,000[1 + \dots + v_{.05}^3]$

(D) $X[(1.05)^{17} + (1.05)^{16} + \dots + (1.05)^1] = 50,000[1 + \dots + v_{.05}^3]$

(E) $X[(1 + v_{.05}^1 + \dots + v_{.05}^{17})] = 50,000[v_{.05}^{18} + \dots + v_{.05}^{22}]$