

Question #244

Answer: C

$${}_4AS = \frac{({}_3AS + G - c_4G - e_4)(1+i) - 1000q_{x+3}^{(d)} - {}_4CVq_{x+3}^{(w)}}{1 - q_{x+3}^{(d)} - q_{x+3}^{(w)}}$$

Plugging in the given values:

$${}_4AS = \frac{(25.22 + 30 - (0.02)(30) - 5)(1.05) - 1000(0.013) - 75(0.05)}{1 - 0.013 - 0.05}$$

$$= \frac{35.351}{0.937}$$

$$= 37.73$$

With higher expenses and withdrawals:

$$\begin{aligned} {}_4AS^{\text{revised}} &= \frac{25.22 + 30 - (1.2)((0.02)(30) + 5)(1.05) - 1000(0.013) - 75(1.2)(0.05)}{1 - 0.013 - (1.2)(0.05)} \\ &= \frac{(48.5)(1.05) - 13 - 4.5}{0.927} \\ &= \frac{33.425}{0.927} \\ &= 36.06 \end{aligned}$$

$$\begin{aligned} {}_4AS - {}_4AS^{\text{revised}} &= 37.73 - 36.06 \\ &= 1.67 \end{aligned}$$