Topic: Single deposit, compounded n times, future value

Question: Find the future value of a savings bond after 4 years, if the present value is $\$500$ and the bond has monthly compounded annual interest of $10\,\%$.

Answer choices:

A $\$700.00$

B $\$612.19$

C $\$744.68$

D $\$551.97$

Solution: C

Plugging the values we've been given into the future value formula, we get

$$FV = PV\left(1 + \frac{r}{n}\right)^{nt}$$

$$FV = 500\left(1 + \frac{0.10}{12}\right)^{(12)(4)}$$

$$FV = 500\left(1 + \frac{0.10}{12}\right)^{48}$$

$$FV \approx \$744.68$$

Topic: Single deposit, compounded n times, future value

Question: Find the future value of $\$12{,}000$ after 6 years, at an annual rate of $3.5\,\%$, compounded quarterly.

Answer choices:

A $\$14{,}751.06$

B $\$14{,}790.62$

C $\$27{,}399.94$

D $\$14{,}520.00$

Solution: B

Plugging the values we've been given into the future value formula, we get

$$FV = PV\left(1 + \frac{r}{n}\right)^{nt}$$

$$FV = 12{,}000\left(1 + \frac{0.035}{4}\right)^{(4)(6)}$$

$$FV = 12{,}000\left(1 + \frac{0.035}{4}\right)^{24}$$

$$FV \approx \$14{,}790.62$$

Topic: Single deposit, compounded n times, future value

Question: Find the future value of $\$15{,}000$ after 9 years, at an annual rate of $4.5\,\%$, compounded monthly.

Answer choices:

A $\$21{,}075.00$

B $\$15{,}513.91$

C $\$22{,}291.43$

D $\$22{,}472.51$

Solution: D

Plugging the values we've been given into the future value formula, we get

$$FV = PV\left(1 + \frac{r}{n}\right)^{nt}$$

$$FV = 15{,}000\left(1 + \frac{0.045}{12}\right)^{(12)(9)}$$

$$FV = 15{,}000\left(1 + \frac{0.045}{12}\right)^{108}$$

$$FV \approx \$22{,}472.51$$