

Useful Guidelines:

If P is the amount invested at an interest rate r per year, the future value S at the end of t years is

* $S = P(1+r)^t$, with annual compounding.

* $S = P(1 + \frac{r}{k})^{kt}$, with periodic compounding.

[Periodic compounding: the interest is compounded k times per year and the interest rate per period is $\frac{r}{k}$.]

20/20
Good job!

1. If \$4,400 is invested for t years at 6% interest compounded annually, find the future value that results in

a) 10 years

$$S = P(1+r)^t$$

$$S = 4400(1+0.06)^{10}$$

$$P = \$4,400$$

$$r = 0.06$$

$$t = 10 \text{ yrs}$$

$$S = 4400(1.06)^{10}$$

$$= \$7879.73$$

b) 20 years

$$S = 4400(1+0.06)^{20}$$

$$S = 4400(1.06)^{20}$$

$$S = \$14,111.40$$

2. If \$20,000 is invested at 8% interest compounded quarterly, find the future value in

a) 20 years

$$S = P(1 + \frac{r}{k})^{kt}$$

$$20,000(1 + \frac{0.08}{4})^{(4)(20)}$$

$$= 20,000(1 + 0.02)^{80}$$

$$= 20,000(1.02)^{80}$$

$$= \$97,508.78$$

b) 30 years

$$S = P(1 + \frac{r}{k})^{kt}$$

$$= 20,000(1 + \frac{0.08}{4})^{(4)(30)}$$

$$= 20,000(1.02)^{120}$$

$$=$$

3. If \$5,000 is invested at 12% interest compounded monthly, find the interest earned in 10 years.

$$S = P(1 + \frac{r}{k})^{kt}$$

$$= 5000(1 + \frac{0.12}{12})^{(12)(10)}$$

$$= 5000(1 + .01)^{120}$$

$$= \$16,501.93$$