If $7,500 is invested in an account earning 5% interest compounded quarterly, how many years pass until there is $20,000 in the account?

Solution

$A = P(1 + \frac{r}{n})^{nt}$

$P = 7500, r = 0.05, n = 4, A = 20000$

Substitute this values to the equation and solve it for t

$20000 = 7500(1 + \frac{0.05}{4})^{4t}$

$(1 + \frac{0.05}{4})^{4t} = \frac{8}{3}$

$1.0125^{4t} = \frac{8}{3}$

$t = 19.74 \approx 20$

Answer

20 years