1.8 - Graded

48. Initial deposit $1000

Annual interest rate 8%, compounded monthly

$$2000 = 1000\left(1 + \frac{.08}{12}\right)^{12t}$$

$$2000 = 1000\left[\left(1 + \frac{.08}{12}\right)^{12}\right]^{t}$$

$$\frac{2000}{1000} = \frac{1000(1.083)^{t}}{1000}$$

$$2 = 1.083^{t}$$

If $t = 3$ then 1.083^{t} is $= 1.27$

$= 10$ $= 2.21$

$= 9$ $= 2.05$

$= 8.7$ $= 2.001$

At an annual interest rate of 8% an initial deposit of $1000 will double in 8.7 years. ✓

To solve this I plugged in the values I knew and simplified the equation to $2 = 1.083^{t}$. Then I just plugged in values for "t" and when the output was close to 2 I knew it was about 8.7 years.