$12,000 is invested in an account compounded continuously at rate of 6.5 % .
   a) Determine the amount in the account at the end of 15 years.
   b) How many years will it take for the account to grow to $ 1,000,000 ?

- We must use the exponential growth equation: $A(t) = A_0 e^{rt}$

- For this problem we have $A_0 = 12000$ *and* $r = .065$.

- Since $A(t) = 12000 e^{0.065\,t}$, $A(15) = 12000 e^{(.065)\,15} = $31,814.00$

- To determine how long it takes to grow to $1,000,000, we must
  solve the equation $1000000 = 12000 e^{0.065\,t}$ for t .

- $1000000 = 12000 e^{0.065\,t}$ $\Rightarrow$ $\dfrac{1000000}{12000} = \dfrac{1000}{12} = e^{0.065\,t}$ $\Rightarrow$

- $\ln\left(\dfrac{1000}{12}\right) = \ln\left(e^{0.065\,t}\right)$ $\Rightarrow$ $4.4228 = 0.065\,t$ $\Rightarrow$

- $t = 68.04$ *years*