1) Define relative rate of change
   
   The relative rate of change of a quantity, $f(t)$, is the percent change in it per unit time, it is given by the formula
   
   \[
   \text{relative rate of change at } t = \frac{\frac{d}{dt} [\ln (f(t))]}{f(t)}
   \]

2) If the value of a mutual fund/share is given by the function

   \[f(t) = 20\sqrt{t+1}\]
   
   dollars $t$ years after 2000, what will the percentage growth rate be for the fund in 2010?

   \[
   \frac{d}{dt} [\ln (f(t))] = \frac{d}{dt} [\ln (20\sqrt{t+1})]
   \]
   
   \[
   = \frac{d}{dt} [\ln 20 + \ln \sqrt{t+1}]
   \]
   
   \[
   = \frac{d}{dt} [\ln 20 + \frac{1}{2} \ln (t+1)]
   \]
   
   \[
   = 0 + \frac{1}{2} \frac{\frac{d}{dt}(t+1)}{t+1} = \frac{1}{2(t+1)}
   \]

   At $t = 10$, this is $\frac{1}{22} \approx 0.095$, i.e. 4.5%