HA2T
7.4 Day 2 WS Compound Interest

Name: Key

1. Find the amount you would have by investing $2000 at an annual rate of 6% compounded annually, quarterly, monthly, daily, and continuously for four years. How long would it take to double in each case?

$y = 2000\left(1+\frac{.06}{1}\right)^{4}$	$2524.95	$2 = (1+.06)^{t}$	$t = 11.9$ yrs
$y = 2000\left(1+\frac{.06}{4}\right)^{16}$	$2537.97	$2 = \left(1+\frac{.06}{4}\right)^{4t}$	$t = 11.64$ yrs
$y = 2000\left(1+\frac{.06}{12}\right)^{48}$	$2540.98	$2 = \left(1+\frac{.06}{12}\right)^{12t}$	$t = 11.58$ yrs
$y = 2000\left(1+\frac{.06}{365}\right)^{1460}$	$2542.45	$2 = \left(1+\frac{.06}{365}\right)^{365t}$	$t = 11.55$ yrs
$y = 2000e^{(.06)(4)}$	$2542.50	$2 = e^{.06t}$	$t = 11.55$ yrs

2. Find the amount you would have by investing $1600 for three years in the following situations.
   a. The account pays 2.5% annual interest compounded monthly.
   b. The account pays 1.75% annual interest compounded quarterly.
   c. The account pays 4% annual interest compounded yearly.

$y = 1600\left(1+\frac{.025}{12}\right)^{36}$ $1724.48

$y = 1600\left(1+\frac{.0175}{4}\right)^{12}$ $1686.05

$y = 1600\left(1+\frac{.04}{1}\right)^{3}$ $1799.78

3. If Thomas Jefferson invested $1000 at 4% interest per year, compounded quarterly, on January 1, 1776, and this bank account was discovered on July 1, 1976, how much would his descendants stand to inherit (before taxes)?

$y = 1000\left(1+\frac{.04}{4}\right)^{4(200.5)}$

$= \$2,922,414.23$