<u>Practice 5.5A</u>: Compound Interest Applications

1. Calculate the time *t* necessary for P dollars to triple if the interest is compounded <u>continuously</u> at the following rates:

    a. 2%

    b. 4%

    c. 6%

    d. 8%

    e. 10%

    f. 12%

2. Calculate the time *t* necessary for P dollars to triple if the interest is compounded <u>annually</u> at the following rates:

    a. 2%

    b. 4%

    c. 6%

    d. 8%

    e. 10%

    f. 12%

3. Determine the time necessary for *P* dollars to double if it is invested at 10.5% compounded:

    a. *annually*   **b.** *monthly*   **c.** *daily*   **d.** *continuously*

4. Determine the Principle P that must be invested at 12.5%, compounded <u>monthly</u>, so that $1,000,000 will be available for retirement in t years.

    a. $t = 10$ **b.** $t = 20$ **c.** $t = 25$ **d.** $t = 40$

5. Complete the table for a savings account in which interest is compounded <u>continuously</u>.

	Initial Investment	Annual Rate	Time to Double	Amount after 10 years
a.	$20,000	10.5%		
b.	$10,000		5 yrs	
c.		8%		$20,000

6. If $100 is invested in an account for a 10 year period, which would result in a larger amount:

    a. Simple interest at 7.5%: $A = 100(1 + 0.075t)$

    b. Continuously compounding interest at 6.5%: $A = 100e^{0.065t}$

7. **Extra Credit** - If $100 is invested in an account for a 10 year period, which would result in a higher rate of growth: (solve by graphing in the same window. Sketch your graph)

    a. Simple interest at 6%: $A = 100(1 + 0.06t)$

    b. Monthly compounding interest at 5%:

$$A = 100(1 + \frac{.05}{12})^{12t}$$