$A = P\left(1 + \frac{r}{n}\right)^{nt}$ Compound Interest $A = Pe^{rt}$

1. A diamond ring was purchased twenty years ago for $500. The value of the ring increased by 8% each year. What is the value of the ring today?

2. You loan a friend $500 to help them get their first apartment. They want to pay you back in 3 years with 5% interest each year. How much money will they pay you?

3. You want to have $2000 at the end of college to put toward a new car. If you plan to spend 5 years in college, how much should you invest your first year if you can get an interest rate of 10%?

4. Your parents are saving for your college tuition. They want to give you $10,000 for the first year. If they invested 10 years before you go to college, how much do they need to invest at a rate of 8% bi-annually?

5. You want $25,000 for a down payment on a house in 15 years. How much should you invest if you can get an interest rate of 6.5%?

6. You deposit $10,000 in an account that pays 8% annual interest.
   Find the balance after 1 year if the interest is compounded with the given frequency.
   a) annually b) quarterly c) monthly d) daily e) continuously

7. You deposit $1600 in a bank account that pays 2.5% interest compounded continuously. Find the balance after 3 years.

8. You want to have $25,000 to buy a new car in 4 years. If you can get a 12% dividend compounded quarterly how much must you deposit?

9. You want to have $150,000 for retirement in 25 years. How much money must you deposit into an account that pays 4.2% compounded monthly to have this amount?

10. You deposit $3,200 in a bank account that pays 1.2% interest. Find how much you will have in ten years compounded annually, quarterly, and continuously.