

recursive

$$\begin{cases} a_1 = 1^{\text{st}} \text{ term} \\ a_n = a_{n-1} \times r \end{cases}$$

critical pts.

used to graph

exp. function  
(0, a)(1, a · b)  
y = 0

exp. decay

$$P_t = P_0 (1 - r)^t$$

exp growth.

$$P_t = P_0 (1 + r)^t$$

Compound interest

$$P_t = P_0 \left(1 + \frac{r}{n}\right)^{nt}$$

asymptote

$$y = k$$

simple interest

$$I = prt$$

$$\text{Total} = p + prt$$

explicit

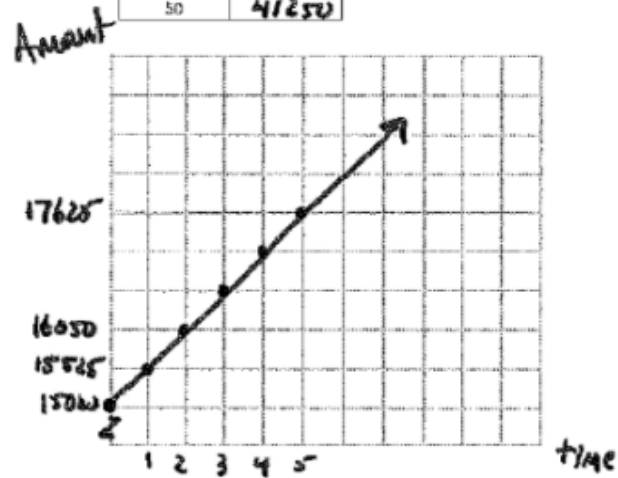
$$a_n = a_1 (r)^{n-1}$$

$$\begin{aligned} & \text{y-int poly in } x \\ & (0, f(0)) \\ & y = a \cdot b^{x-h} + k \end{aligned}$$

1. \$15,000 is deposited in an account that pays 3.5 % annual interest. Compare the amount in the account between a simple interest account and one that compounds annually. Create a graph for each situation.

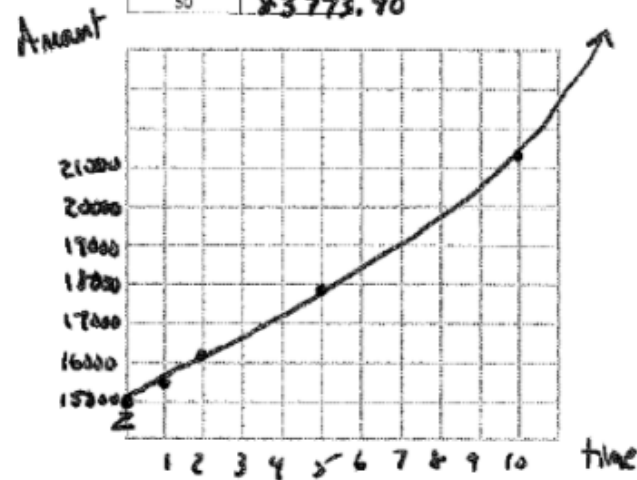
### Simple

Year	Amount
0	15000
1	15525
2	16050
5	17625
10	20250
15	22875
20	25500
30	30750
40	36000
50	41250



### Compound

Year	Amount
0	15000
1	15525
2	16068.38
5	17815.29
10	21158.98
15	25130.23
20	29846.83
30	42101.48
40	59388.90
50	83773.40



2. You deposit \$2000 in an account that earns 5% annual interest. Compare the balance in the account at the end of 2 years for a simple interest account and a compound interest account, compounded monthly.

$$\text{simple } P_t = 2000 + 2000(0.05)(2) = \underline{\$2200}$$

$$\text{compound } P_t = 2000 \left(1 + \frac{0.05}{12}\right)^{12 \cdot 2} = \underline{\$2209.88}$$

$n=12$

3. You deposit \$30,000 in an account that earns 5% interest, compounded weekly. Find the balance in the account at the end of 5 years, at the end of 10 years, and at the end of 20 years.

$$P_t = 30000 \left(1 + \frac{0.05}{52}\right)^{52t} \quad P_5 = 30000 \left(1 + \frac{0.05}{52}\right)^{52 \cdot 5} = \underline{\$38516.14}$$

$$P_{20} = 30000 \left(1 + \frac{0.05}{52}\right)^{52 \cdot 20} = \underline{\$81509.28} \quad P_{10} = 30000 \left(1 + \frac{0.05}{52}\right)^{52 \cdot 10} = \underline{\$49449.76}$$

4. Your investment of \$18,100 at 13.6% compounded quarterly for 7 years and 6 months will be worth how much?

$$P_E = 18100 \left(1 + \frac{.136}{4}\right)^{4 \cdot 7.5} = 49,350.86$$

5. You gave your friend a short term 2 year loan of \$43,000 at 3% compounded annually. What will be your total return?

$$P_E = 43000 \left(1 + \frac{.03}{1}\right)^{1 \cdot 2} = \underline{45,618.70}$$

# Unit 4 Test Review