

## 7.1 Exponential Functions

**Solve the following problems below.**

1. a) What is the equation for simple interest?  
b) What does A stand for?  
c) What does P stand for?  
d) What does r stand for?  
e) What does t stand for?
2. A piece of equipment costs \$85,000 new but increases 11% per year
  - a. What will the value of the equipment be after 10 years.
  - b. When will the value be worth \$100,000?
3. You purchase an acre of land for \$20,000, the lands value increases 4.5% per year.
  - a. What will the value of the land be after 25 years.
  - b. When will the value of the land be worth \$75,000?
4. Julia bought a new iPod for \$500 last year. A year after she purchased the iPod, the price dropped to \$345.
  - a. Find the rate the iPod decreases in value.  
(growth rate)
    - b. What will the value of the iPod be after 9 years.
    - c. When will the value of the iPod be worth \$200?
5. The flu bug is spreading through the school. It started off with 10 people being sick on day 0 and on day 1 25 people were infected.
  - a. Find the rate at which the flu infects people.  
(growth rate)
    - b. How many people will have the flu after one week?
    - c. When will 1000 people be infected?

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6. Mr. Peterson wrote a check of \$7820 to pay off a loan, which was given to him at a rate of 5% simple interest for 3 years. How much money did he borrow originally?

8. Jack deposited \$1400 in his bank account. After 3 years, the account is worth \$1,694. Find the simple interest rate the account earned.

7. If \$3840 is invested in an account at 5% simple interest, how long will it take the account balance to grow to \$4800?

9. Anna invested \$2500 at an interest rate of 5%. How long will it take until Anna earns \$4000?

Graph the function below.

10.  $f(x) = -|x - 4| + 7$

11.  $f(x) = \sqrt{x + 3} - 6$

Simplify.

12.  $(4 - 4i)(2 + 5i)$

13.  $(i)^2 - 4i + 5i(6 - 7i)$

Factor.

14.  $49x^2 + 9$

15.  $25x^2 + 16y^2$

16. Given the equation  $f(x) = a(x - h)^2 + k$ , describe how the following variables transform the function.

a =

h =

k =

Solve.

17.  $9x^2 - 4x = -6$

18.  $5x^2 + 4 = -3x$