**Solve the following problems below. Round to two decimal places.**

**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 brand new car value is $22,000 but decreases 6% per year

a. What will the value of the car be after 10 years.

b. When will the value be worth $10,000 ?

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. (decay 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? Hint: How many days are in a week?

c. When will 1000 people be infected?

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?

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

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.

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

Graph the function below.

10. $f\left(x\right)= -\left|x-4\right|+7$ 11. $f\left(x\right)=\sqrt{x+3}-6$

Simplify.

12. $\left(4-4i\right)\left(2+5i\right)$ 13. $\left(i\right)^{2}-4i+5i\left(6-7i\right)$

Factor.

14. $49x^{2}+9$ 15. $25x^{2}+16y^{2}$

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

a = h = k =

Solve.

17. $9x^{2}-4x=-6$ 18. $5x^{2}+4=-3x$