

Sections 3.4, 3.5

1. Fill in the table below.

Function $f(x)=ab^x$	Vertical Intercept	Growth or Decay	Continuous? Yes, No	Rate (as a percent)
$f(x) = 5(1.052)^x$				
$f(x) = 34(0.68)^x$				
$f(x) = 255(0.99)^x$				
$f(x) = 52e^{.23x}$				
$f(x) = 653e^{-0.73x}$				
$f(x) = e^{-0.034x}$				
	(0, 20)	Growth	Yes	5.3%
	(0, 100)	Decay	No	12%
	(0, 5)	Decay	Yes	12%
	(0, 11)	Growth	No	1.23%

2. At 8:00am, you take 200mg of Tylenol. The amount of Tylenol in your body decreases at a continuous rate of 14% per hour.

a. Write a formula for the amount of Tylenol in your body  $t$  hours after 8am.

b. How much of Tylenol will be in your body at 10am?

c. At what time will there be less than 100 mg of Tylenol in your body?

3. You deposit \$10,000 into an account that pays 6% annual interest, compounded monthly.
  - a. Write a formula that gives the balance in the account after  $t$  years.
  
  
  
  
  
  
  
  
  
  
  - b. Determine the balance in this account after 3 years.
  
  
  
  
  
  
  
  
  
  
  - c. How long will it take your initial investment to double?
  
  
  
  
  
  
  
  
  
  
  - d. What is the effective annual interest rate for this account?
  
  
  
  
  
  
  
  
  
  
4. You deposit \$10,000 into an account that pays 6% annual interest, compounded continuously.
  - a. Write a formula that gives the balance in the account after  $t$  years.
  
  
  
  
  
  
  
  
  
  
  - b. Determine the balance in this account after 3 years.
  
  
  
  
  
  
  
  
  
  
  - c. How long will it take your initial investment to double?
  
  
  
  
  
  
  
  
  
  
  - d. What is the effective annual interest rate for this account?