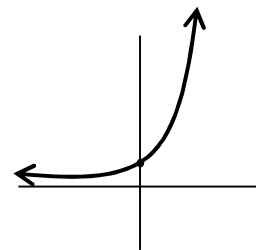


Chapter 6

Exponential Functions Homework



For each function:

- List the y-intercept
- Indicate whether it is increasing or decreasing

- $y = 42(1.25)^x$
- $f(x) = 0.8(20)^x$
- $g(x) = 450(\frac{3}{4})^x$
- $y = \frac{1}{2}(0.489)^x$

For each function:

- Calculate the y-value for each x in the list.
- Graph the function neatly on graph paper (Do not sketch. Plot points.)

- $y = 3(1.5)^x$ Let $x = \{0, 1, 2, 3, 4, 5\}$
- $y = 10(0.6)^x$ Let $x = \{0, 1, 2, 3, 7, 10\}$

Write an exponential function for each problem. $y = a(b)^x$

- The height of a plant is 8 inches, and it increase by 5% every week.
- You deposit \$250 in the bank, and it earns 3% interest every year.
- 2000 bacteria were living on a Petri dish, and their population increased by 18% every day.
- A beach contains 42 tons of sand, and the amount of sand decreased by 2% every time a wave goes out.
- A runner's time to finish a race was 83 seconds, and it decreased by 12% every week he practiced.
- A chunk of uranium had a mass of 24 grams, and its mass decreased by $\frac{1}{4}$ every year.

For each problem:

- Write an exponential function to model the problem.
- Solve for the y-values it asks for.

- You invest \$5000 in a fund that earns 7% interest. How much money is in your account 8 years later?
- A radioactive rock loses 4% of its mass every hour. The rock has a mass of 80 grams. What is its mass 12 hours later?
- There are 120 bacteria on a Petri dish. Their population grows 36% every day. How many bacteria are there after four days?
- There are 5300 rural acres in Comal County. The acreage decreases by $\frac{3}{100}$ each year. How many rural acres will there be in 15 years?
- Your little brother is 32 inches tall. If his height increases by $\frac{1}{12}$ every year. How tall will he be in 10 years?

Use this formula for Problems 18 – 20.

$$y = a b^x$$

18. The number of bacteria on a Petri dish increase exponentially. On Monday, there were 80 bacteria. On Wednesday, there were 2000.
 - a. Find the exponential function that represents the data.
 - b. Predict the number of bacteria in the Petri dish on Friday (Day 4).

19. A bank compounds the interest on your savings account. You opened your account with a deposit of \$1000. At the end of 1 year, you have \$1052 in your account.
 - a. Find the exponential function that represents the data.
 - b. How much money will you have after 10 years?

20. A radioactive meteor lands in your back yard. It has a mass of 50 kg. After 5 years, it has a mass of 30 kg.
 - a. Find the exponential function that represents the data.
 - b. What will its mass be in 10 years?