**Homework 8-1: Complete your assignment on a separate sheet of paper. Show all work.**

1. Is the relationship between the variables a direct variation, an inverse variation, or neither? Write function models for direct and indirect variation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***x*** | 1 | 3 | 12 | 15 |
| ***y*** | 6 | 2 | 0.5 | 0.4 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***x*** | -3 | 5 | 6 | 16 |
| ***y*** | -15 | 25 | 30 | 80 |

1. b.

1. Describe the variation in the given equation
2. Suppose that *x* and *y* vary inversely. Write a function that models the variation and find *y* when *x* = 10.
3. *x* = -13, when *y* = 100 b. *x* = 20, when *y* = -4
4. In a bake sale, you recorded the number of muffins sold and the amount of sales in the table.
5. What is a function that relates the sales and the number of muffins?
6. How many muffins would you have to sell to make at least $250 in sales?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # of muffins (*m*) | 5 | 8 | 13 | 20 |
| Sales (*s*) | $12.50 | $20.00 | $32.50 | $50.00 |

**Practice 8-2: Complete your assignment on a separate sheet of paper. Show all work.**

1. Graph
2. Describe the transformation from the graph of to the following.
3. b.
4. Consider . State the transformations, domain, range and asymptotes.
5. Write an equation for the translation of with asymptotes at and .
6. The weight P in pounds that a beam can safely carry is inversely proportional to the distance *D* in feet between the supports of the beam. For a certain type of wooden beam, . What distance between supports is needed to carry 1200 lb?

**Practice 8-3: Complete your assignment on a separate sheet of paper. Show all work.**

1. State the domain, find any points of discontinuity for each rational function, state the *x-* and *y-* intercepts. Are there any vertical asymptotes? Are the points of discontinuity removable or non-removable?
   1. b. c.
2. Find the horizontal asymptotes.
   1. b. c.
3. Sketch the graph of each rational function

**Practice 8-4: Complete your assignment on a separate sheet of paper. Show all work.**

**1.** Simplify each rational expression. State any restrictions on the variable.

a. b. c.

**2.** Multiply or Divide. State any restrictions on the variable.

a. b.

**3.** Is the equation in simplest form? Explain how you can tell.

**4.** A student claims that is the only solution of the equation . Is the student correct? Explain.

**5**. Write a rational expression that simplifies to

**Practice 8-5: Complete your assignment on a separate sheet of paper. Show all work.**

1. Add or subtract. State any restrictions on the variable.
2. b. c. d.
3. Simplify the complex fraction.
4. b.
5. A rectangle has a length of and a width of . Write an expression to represent the perimeter of the rectangle (P = 2L + 2W).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # of muffins (*m*) | 5 | 8 | 13 | 20 |
| Sales (*s*) | $12.50 | $20.00 | $32.50 | $50.00 |

**Practice 8-6: Complete your assignment on a separate sheet of paper. Show all work.**

1. Solve each equation. Check each solution.
2. b. c.
3. You are riding your bike to a store 4 mi away. When there is no wind, you ride at 10 mi/h. Today your trip took 1 hour. What was the speed of the wind today?