

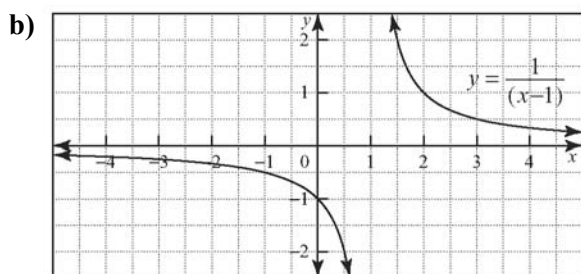
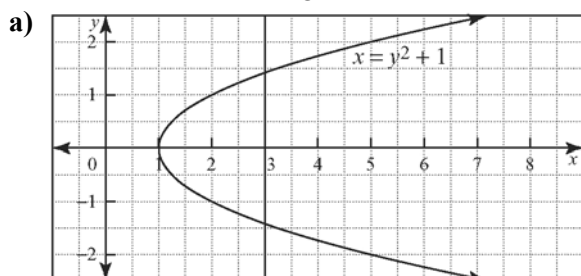
Name: _____

Date: _____

1.1 Functions, Domain, and Range

BLM 1-2

1. State the domain and range of each relation.



2. Use **Technology** Determine the domain and range of each relation. Check your answers using a graphing calculator.

a) $y = 2x + 1$

b) $y = \frac{1}{x-2}$

c) $y = 3(x-1)^2 + 4$

d) $y = \sqrt{x+5}$

3. A farmer has 300 m of fencing to enclose a rectangular area, with one side bounded by her barn. What dimensions will maximize the area?

4. Determine the range of each relation for the domain $\{-3, -2, -1, 0, 1, 2, 3\}$.

a) $y = -3x + 4$

b) $y = 2x^2 + 5$

c) $y = \frac{1}{x-4}$

d) $y = -5(x+1)^2 - 4$

5. Sketch a relation with the following properties.

- a) a relation that is a function with a domain that is all real numbers greater than or equal to 6 and a range that is all real numbers less than or equal to 1
- b) a relation that is not a function with a domain that is all real numbers less than or equal to 2 and a range that is all real numbers

6. “Relations and functions can both have a domain and a range that are all real numbers.” Comment on the validity of this statement, using examples where appropriate.

7. A movie rental company charges a flat rental fee of \$8 if a movie is returned within 7 days. If a movie is not returned within that period, a daily charge of \$1 is added to the rental cost until the movie is returned. Suppose that C represents the cost of a rental and d represents the number of days of a rental, with $d = 0$ representing the day a movie is rented.

- a) Give the defining relation for a rental up to 7 days.
- b) Give the defining relation for a rental beyond 7 days.
- c) Graph the two relations.
- d) Explain why the domain and range of a rental are each the set of whole numbers and not real numbers.

