













90. **Geometry** A rectangle is bounded by the  $x$ -axis and the semicircle  $y = \sqrt{36 - x^2}$  (see figure). Write the area  $A$  of the rectangle as a function of  $x$ , and determine the domain of the function.

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#### Summary of Function Terminology

**Function:** A **function** is a relationship between two variables such that to each value of the independent variable there corresponds exactly one value of the dependent variable.

**Function Notation:**  $y = f(x)$

$f$  is the **name** of the function.

$y$  is the **dependent variable**.

$x$  is the **independent variable**.

$f(x)$  is the **value of the function at  $x$** .

**Domain:** The **domain** of a function is the set of all values (inputs) of the independent variable for which the function is defined. If  $x$  is in the domain of  $f$ ,  $f$  is said to be **defined** at  $x$ . If  $x$  is not in the domain of  $f$ ,  $f$  is said to be **undefined** at  $x$ .

**Range:** The range of a function is the set of all values (outputs) assumed by the dependent variable (that is, the set of all function values).

**Implied Domain:** If  $f$  is defined by an algebraic expression and the domain is not specified, the **implied domain** consists of all real numbers for which the expression is defined.

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