



Functions and Applications

Chapter 1: Introduction to the Quadratic Function

1.1 The Characteristics of a Function



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Domain: The set of all values of the independent variable of a relation

Range: The set of all values of the dependent variable of a relation



Functions and Applications

Chapter 1: Introduction to the Quadratic Function

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Relation: A set of ordered pairs; values of the independent variable are paired with values of the dependent variable

Function: A relation where each value of the independent variable corresponds with only one value of the dependent variable



Functions and Applications

Chapter 1: Introduction to the Quadratic Function

1.1 The Characteristics of a Function

Methods of Representing Relations

Ordered Pairs:

$$\{(2,3), (3,6), (4,9), (5,12)\}$$

$$\{(1,-1), (2,-3), (1,2), (3, -5)\}$$

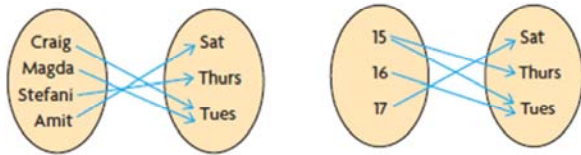
Functions and Applications

Chapter 1: Introduction to the Quadratic Function

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Mapping Diagram:



Functions and Applications

Chapter 1: Introduction to the Quadratic Function

1.1 The Characteristics of a Function

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Equation:

$$y = 2x + 3$$

$$y = x^2$$

$$y^2 + x^2 = 25$$

Functions and Applications

Chapter 1: Introduction to the Quadratic Function

1.1 The Characteristics of a Function

Methods of Representing Relations

Table of Values:

Student	Age	Soccer Practice Day
Craig	15	Tuesday
Magda	16	Tuesday
Stefani	15	Thursday
Amit	17	Saturday

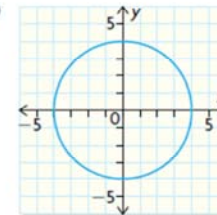
Functions and Applications

Chapter 1: Introduction to the Quadratic Function

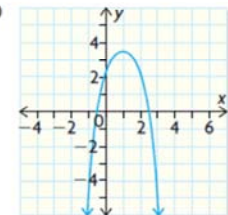
1.1 The Characteristics of a Function

Methods of Representing Relations

Graph: a)



b)



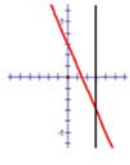
Functions and Applications

Chapter 1: Introduction to the Quadratic Function

1.1 The Characteristics of a Function

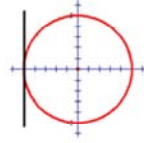
Vertical Line Test: If any vertical line intersects the graph of a relation more than once then the relation is not a function, this is because due to the definition of a function no x co-ordinate on the graph (independent variable) can correspond to more than one y co-ordinate (dependent variable)

Consider the graph of the line $y = -2x + 3$.



This is a function because for every " x " value, there is only one " y " value.
The vertical line test allows us to visually check if any relationship is a function.

Now, let's look a circular relationship.



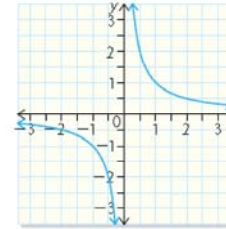
Here is a graph of a circle:
 $x^2 + y^2 = 25$

Functions and Applications

Chapter 1: Introduction to the Quadratic Function

1.1 The Characteristics of a Function

State the Domain and Range of the Function:



Functions and Applications

Chapter 1: Introduction to the Quadratic Function

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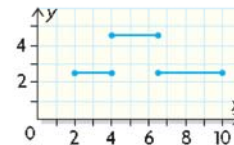


Functions and Applications

Chapter 1: Introduction to the Quadratic Function

1.1 The Characteristics of a Function

State the Domain and Range of the Function:



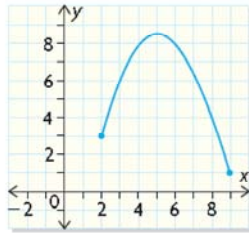


Functions and Applications

Chapter 1: Introduction to the Quadratic Function

1.1 The Characteristics of a Function

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Functions and Applications

Chapter 1: Introduction to the Quadratic Function

1.1 The Characteristics of a Function

Homework:

Page 13, Questions 1-6,7,9,10