Name: _____ Date: _____

Section 1.1 Summary

BLM 1–2
(page 1)

Bracket Interval	Inequality	Number Line	In Words
			The set of all real numbers x such that
(a, b)	$a < x < b$		x is greater than a and less than b
$(a, b]$	$a < x \leq b$		x is greater than a and less than or equal to b
$[a, b)$	$a \leq x < b$		x is greater than or equal to a and less than b
$[a, b]$	$a \leq x \leq b$		x is greater than or equal to a and less than or equal to b
$[a, \infty)$	$x \geq a$		x is greater than or equal to a
$(-\infty, a]$	$x \leq a$		x is less than or equal to a
(a, ∞)	$x > a$		x is greater than a
$(-\infty, a)$	$x < a$		x is less than a
$(-\infty, \infty)$	$-\infty < x < \infty$		x is an element of the real numbers

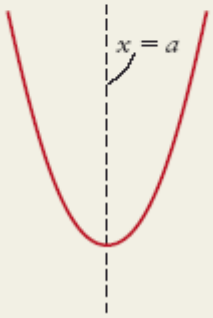
CONNECTIONS

Recall that a relation is a function if for every x-value there is only one y-value. The graph of a relation represents a function if it passes the vertical line test, that is, if a vertical line drawn anywhere along the graph intersects that graph at no more than one point.

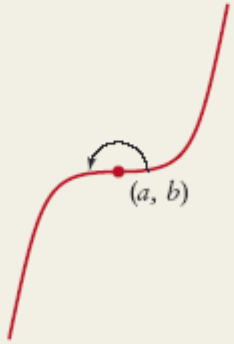
The **end behaviour** of the graph of a function is the behaviour of the y-values as x increases (that is, as x approaches positive infinity, written as $x \to \infty$) and as x decreases (that is, as x approaches negative infinity, written as $x \to -\infty$).

CONNECTIONS

- A graph has **line symmetry** if there is a line $x = a$ that divides the graph into two parts such that each part is a reflection of the other in the line $x = a$.



- A graph has **point symmetry** about a point (a, b) if each part of the graph on one side of (a, b) can be rotated 180° to coincide with part of the graph on the other side of (a, b).



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KEY CONCEPTS

- A polynomial expression has the form
  $a_n x^n + a_{n-1}x^{n-1} + a_{n-2}x^{n-2} + \ldots + a_3x^3 + a_2x^2 + a_1x + a_0$
  where
  - n is a whole number
  - x is a variable
  - the coefficients $a_0, a_1, \ldots, a_n$ are real numbers
  - the degree of the function is n, the exponent of the greatest power of x
  - a_n, the coefficient of the greatest power of x, is the leading coefficient
  - a_0, the term without a variable, is the constant term
- A polynomial function has the form
  $f(x) = a_n x^n + a_{n-1}x^{n-1} + a_{n-2}x^{n-2} + \ldots + a_2x^2 + a_1x + a_0$
- A power function is a polynomial of the form $y = ax^n$, where n is a whole number.
- Power functions have similar characteristics depending on whether their degree is even or odd.
- Even-degree power functions have line symmetry in the y-axis, $x = 0$.
- Odd-degree power functions have point symmetry about the origin, $(0, 0)$.