Welcome to Honors Precalculus!

Find your seat (alphabetical)

Grab a textbook from the front and write your name on the inside cover
Welcome to Honors Precalculus

- Tour of Room
- Syllabus
- Website
- Tutoring
- Absent/Make up work
- Textbooks
- Warm-ups
Instructions for students and parents to join Honors Precalc 2nd Block

Enter this number
81010

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This is your Remind number we created to keep your personal number secret.

This is the unique class code we created for your Honors Precalc 2nd Block class. Each class gets one. Give this to your students and parents too.
Instructions for students and parents to join Honors Precalculus 4th Block

TO: 81010

MESSAGE: @akpc4

Enter this number

This is your Remind number we created to keep your personal number secret.

Text this message

This is the unique class code we created for your Honors Precalculus 4th Block class. Each class gets one. Give this to your students and parents too.
Factor the following

1. \(x^2 - 9x - 10\)       2. \(25y^2 - x^2\)
3. \(x^2 - 5x + 6\)       4. \(9x^2 - 12x + 4\)
5. \(3x^2 + 2x + 12x + 8\) 6. \(4x^2 - 12x\)
1.2 Function and Their Properties

Objectives:
> Determine the domain of a function.
> Determine the symmetry of a function.
A function is a special relationship where each input has a single output.
Determine whether each equation is a function.

(a) $x + y = 2$

(b) $x^2 + y^2 = 4$
Determine the domain of:

a. \( \sqrt{x + 1} \)

\[ \left[ -1, \infty \right) \]

b. \( \frac{1}{x - 3} \neq 0 \)

\[ x \neq 3 \]

General Rules for Domain:

1) NO NEGATIVES UNDER RADICAL

2) NO "0" IN DENOMINATOR

\[ \text{INTERVAL NOTATION} \]

\[ (-\infty, 3) \cup (3, \infty) \]
Use interval notation, determine the domain of

$$\frac{\sqrt{x + 1}}{x - 3 \quad x \neq 3}$$

$$[-1, 3) \cup (3, \infty)$$
Use interval notation, determine the domain of \[ \frac{x + 3}{\sqrt{x + 2}} \quad x \geq -2 \]

\[ (-2, \infty) \]
Use interval notation, determine the domain of

\[ x^3 - x + 7 \]

\[ (-\infty, \infty) \]
Continuity

\( (-\infty, \infty) \)

- Continuous at all \( x \)
- Removable discontinuity
- Removable discontinuity
- Jump discontinuity
- Infinite discontinuity
Increasing and Decreasing Functions

Another function concept that is easy to understand graphically is the property of being increasing, decreasing, or constant on an interval. We illustrate the concept with a few graphs (Figure 1.19):

As \( x \) is increasing, the \( y \) is:
Graph showing:
- Relative Max. at points labeled 'b' and 'd'
- Relative Min. at points labeled 'c'
- Absolute and Relative Max. points labeled 'a' and 'e'

Key Points:
- Relative Max. at 'b': $x = b$
- Relative Max. at 'd': $x = d$
Tests for Even and Odd Functions

A function $y = f(x)$ is **even** if, for each $x$ in the domain of $f$,

$$f(-x) = f(x).$$

A function $y = f(x)$ is **odd** if, for each $x$ in the domain of $f$,

$$f(-x) = -f(x).$$
Tests for Even and Odd Functions

A function \( y = f(x) \) is **even** if, for each \( x \) in the domain of \( f \),
\[
f(-x) = f(x).
\]

A function \( y = f(x) \) is **odd** if, for each \( x \) in the domain of \( f \),
\[
f(-x) = -f(x).
\]

g(x) = x^3 - x
Tests for Even and Odd Functions

A function $y = f(x)$ is **even** if, for each $x$ in the domain of $f$,

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$$f(-x) = -f(x).$$

$h(x) = x^2 + 1$