Welcome to Honors Precalculus!

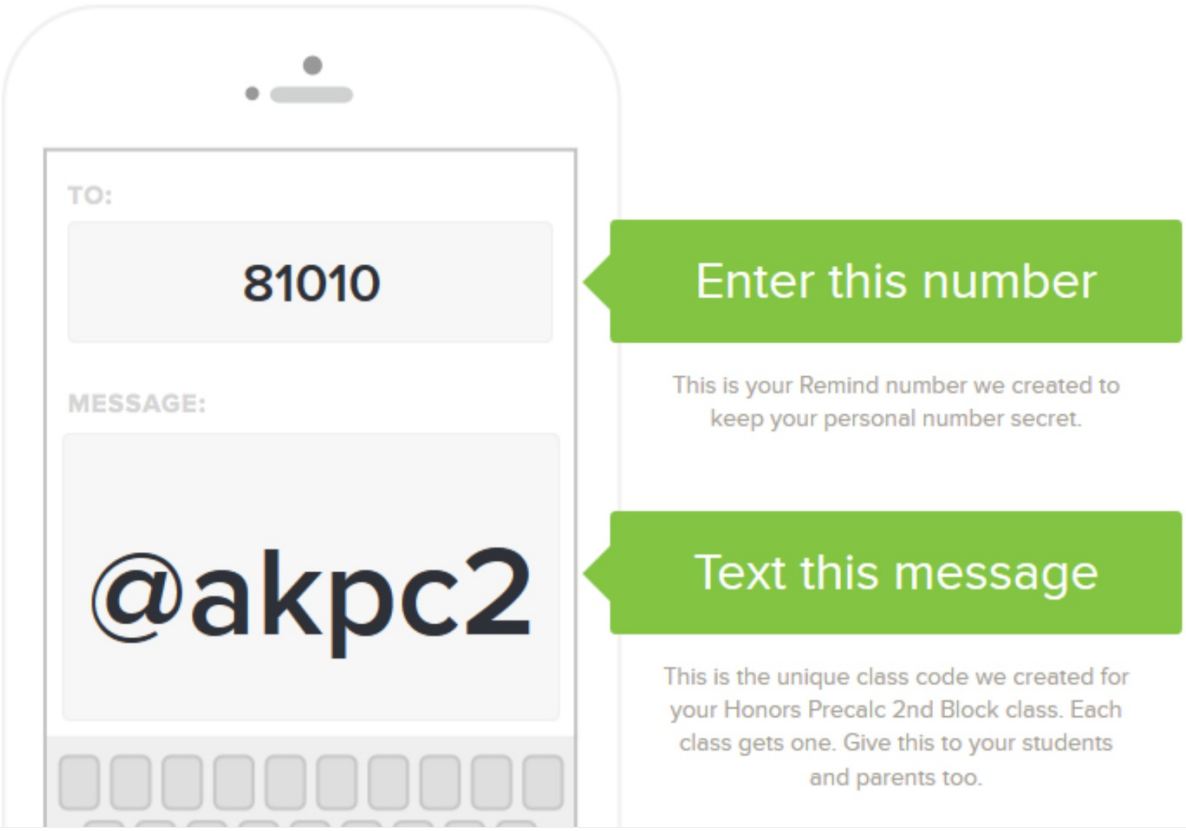
Find your seat (alphabetical)

Grab a textbook from the front and write your name on the inside cover

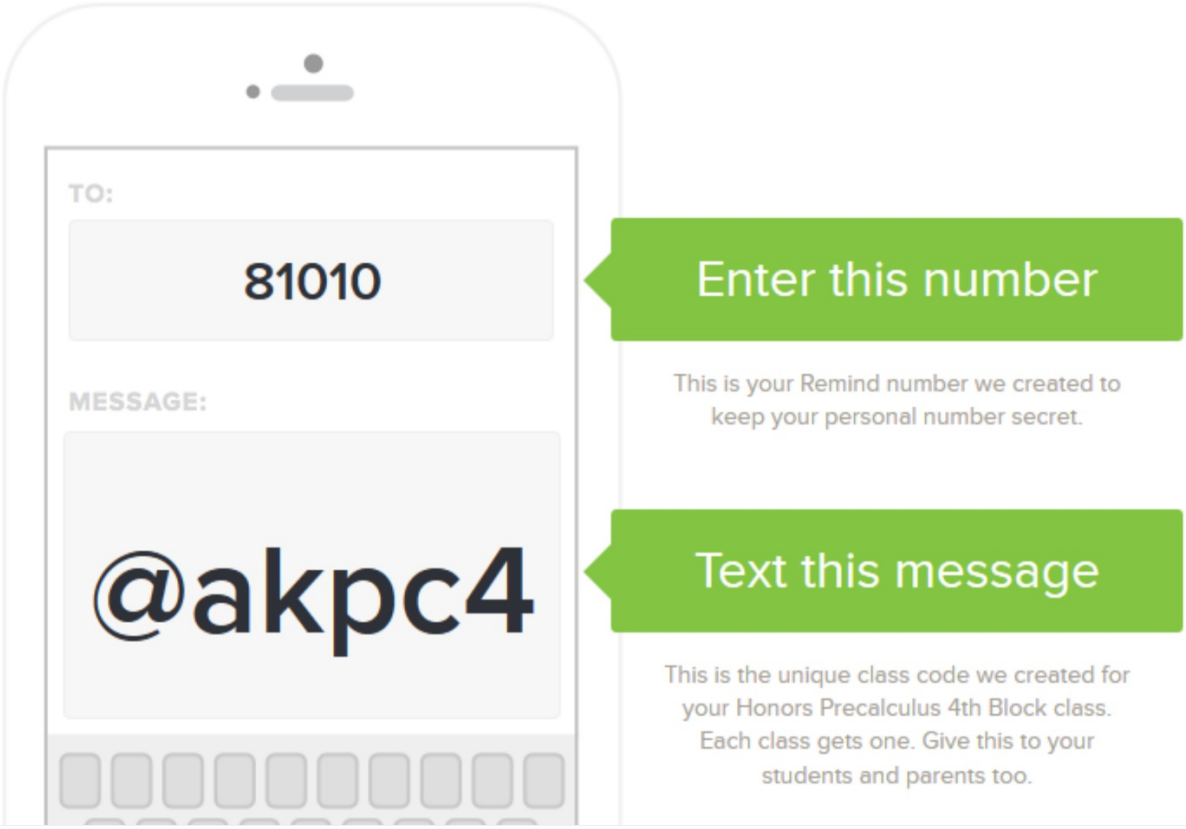
Welcome to Honors Precalculus

- Tour of Room
- Syllabus
- Website
- Tutoring
- Absent/Make up work
- Textbooks
- Warm-ups

Instructions for students and parents to join Honors Precalc 2nd Block



Instructions for students and parents to join Honors Precalculus 4th Block



Factor the following

1. $x^2 - 9x - 10$

2. $25y^2 - x^2$

3. $x^2 - 5x + 6$

4. $9x^2 - 12x + 4$

5. $3x^2 + 2x + 12x + 8$

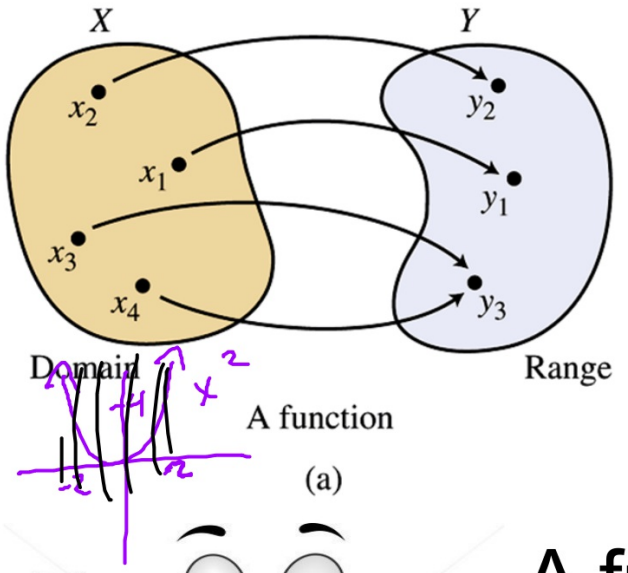
6. $4x^2 - 12x$

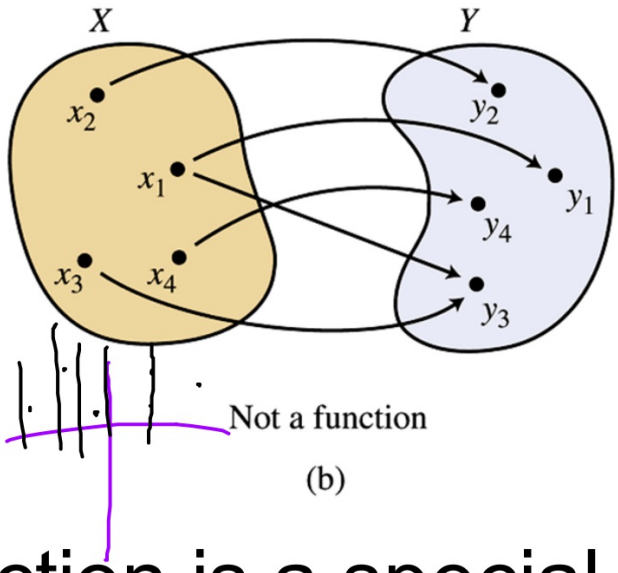
1.2 Function and Their Properties

Objectives:

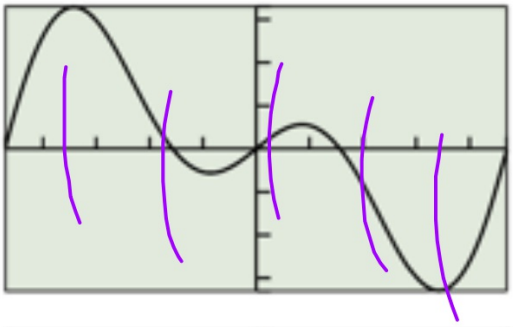
> Determine the domain of a function.

> Determine the symmetry of a function.

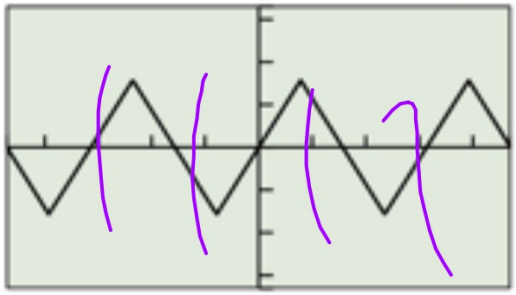




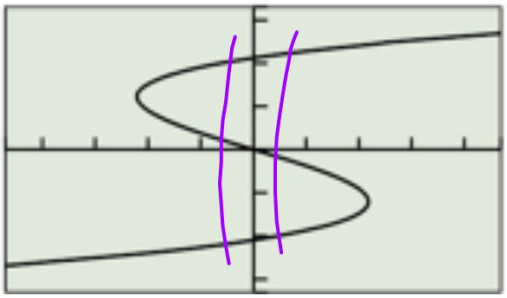
A function is a special relationship where each input has a single output.



YES



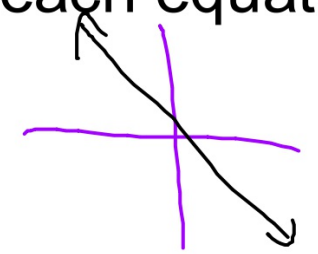
YES



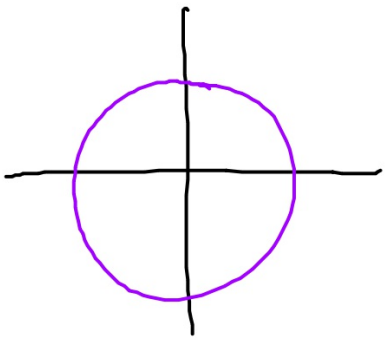
NO

Determine whether each equation is a function.

(a) $x + y = 2$ $y = 2 - x$



(b) $x^2 + y^2 = 4$



Determine the domain of:

INTERVAL NOTATION

$(-\infty, 3) \cup (3, \infty)$

a. $\sqrt{x+1}$

$[-1, \infty)$

b. $\frac{1}{x-3}$

$x - 3 \neq 0$

$x \neq 3$

General Rules for Domain:

1) NO NEGATIVES UNDER RADICAL

2) NO "0" IN DENOMINATOR

x^2

$(-\infty, \infty)$

INCLUDE 2 $[2$

NOT INCLUDE $(2$

Use interval notation, determine the domain of

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

$$[-1, 3) \cup (3, \infty)$$

Use interval notation, determine the domain of

$$\frac{x+3}{\sqrt{x+2}}$$

$x \geq -2$

$(-2, \infty)$

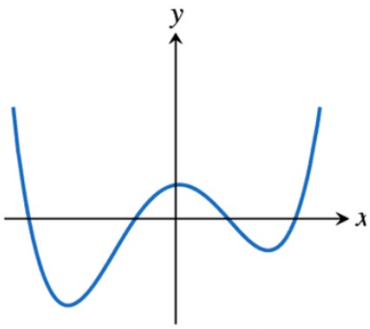
Use interval notation, determine the domain of

$$x^3 - x + 7$$

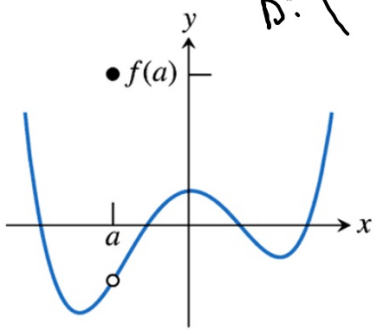
$(-\infty, \infty)$

Continuity

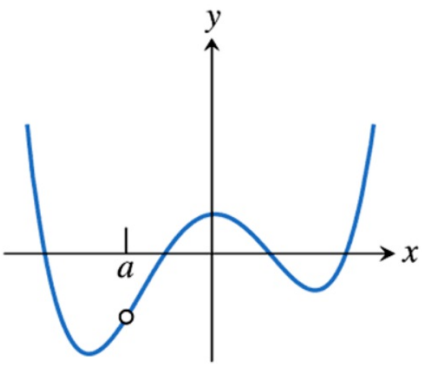
D: $(-\infty, \infty)$



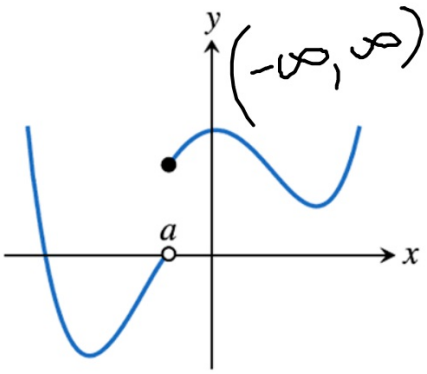
Continuous at all x



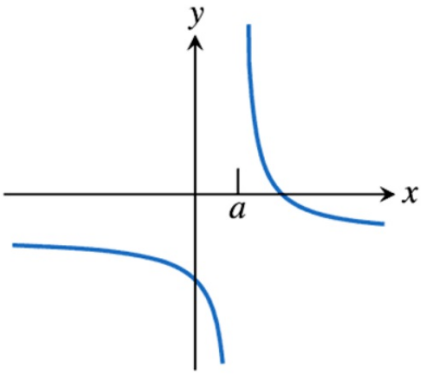
Removable discontinuity



Removable discontinuity



Jump discontinuity

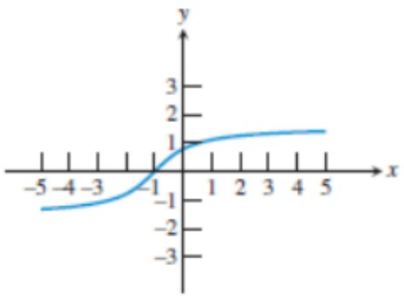


Infinite discontinuity

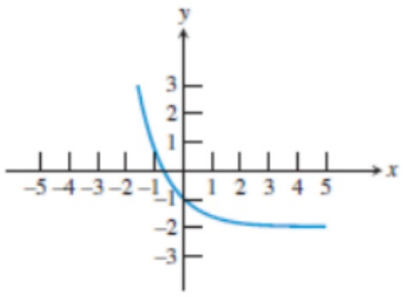
Increasing and Decreasing Functions

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):

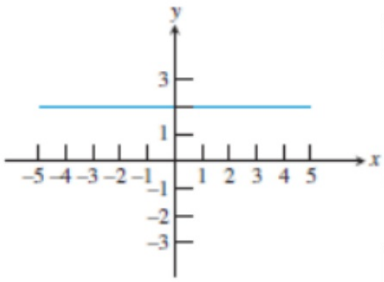
As x is increasing, the y is:



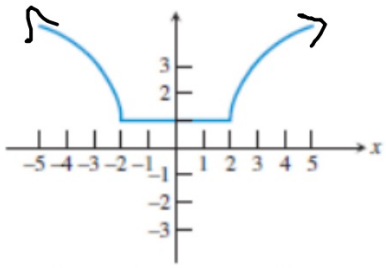
Increasing



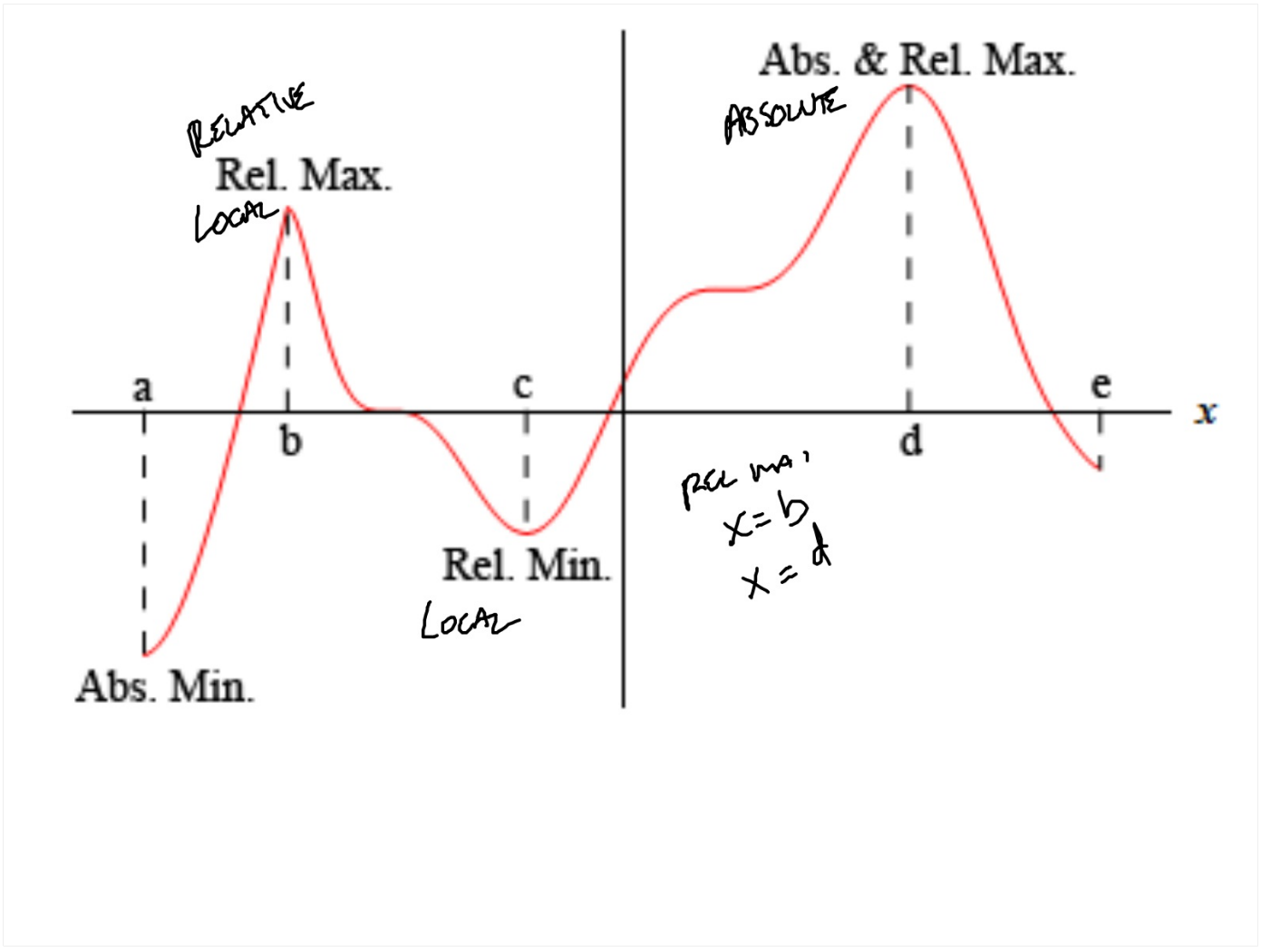
Decreasing



Constant



Decreasing on $(-\infty, -2]$
Constant on $[-2, 2]$
Increasing on $[2, \infty)$


Abs. & Rel. Max.
ABSOLUTE
RELATIVE
Rel. Max.
LOCAL
a
b
c
d
e
x
Rel. Min.
LOCAL
Abs. Min.
REL MAX
x = b
x = d

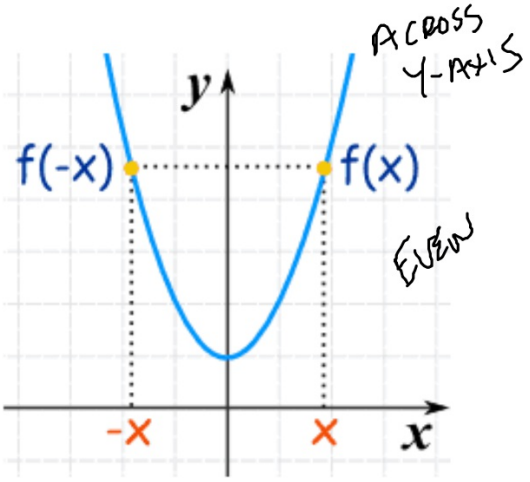
Tests for Even and Odd Functions

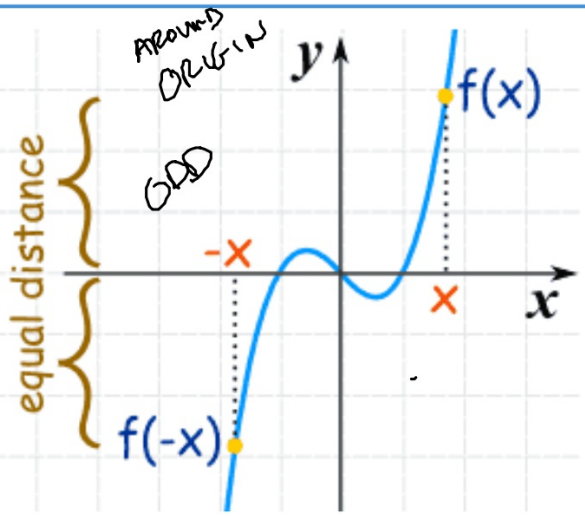
A function $y = f(x)$ is **even** if, for each x in the domain of f,

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

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

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





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$g(x) = x^3 - x$

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