## Today's Agenda
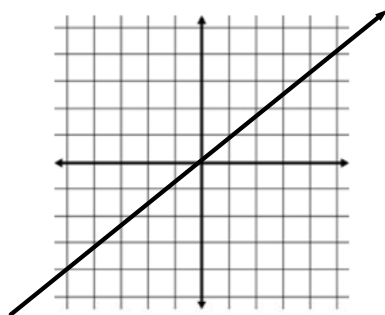
Assemble your booklet

Have a pencil and calculator ready to go!

We will work on the booklet as a class

(15) $6 \div 6 + 1 + 1 - 5$

$1 + 1 + 1 - 5$

$-2$

# Linear Functions

*How do I recognize from a(n)...??*

| EQUATION | GRAPH | TABLE OF VALUES |
|---|---|---|
| $y = x$ <br> $y = mx + b$ | line <br> (straight) | |

Domain        _____

Range        _____

Increasing interval        _____

Decreasing interval        _____

End behavior

$$\text{as } x \rightarrow \infty, \; f(x) \rightarrow \underline{\quad}$$
$$\text{as } x \rightarrow -\infty, f(x) \rightarrow \underline{\quad}$$

Other key characteristics
- HOY (horizontal line – zero slope – $y = constant$)
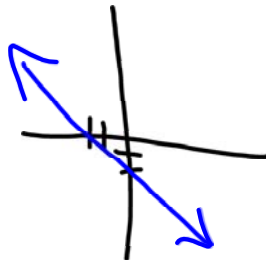- VUX (vertical line – undefined slope – $x = constant$)

1

$y = x + 3$
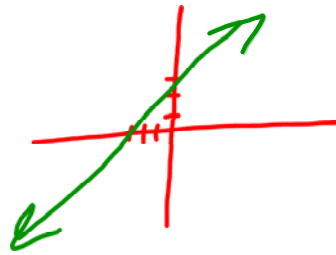
$D: (-\infty, +\infty)$

$R: (-\infty, +\infty)$

$y = -3x$
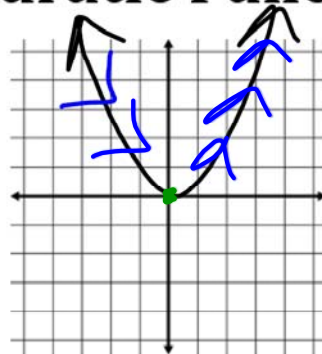
$y = \frac{2}{3}x$

$x + y = -2$

# Quadratic Functions

*How do I recognize from a(n)...??*

| EQUATION | GRAPH | TABLE OF VALUES |
|---|---|---|
| $y = x^2$ | U shape Parabola | |

Domain    $(-\infty, +\infty)$

Range    $[0, +\infty)$

Increasing interval    _____

Decreasing interval    _____

End behavior

as $x \to \infty$, $f(x) \to$ ____

as $x \to -\infty$, $f(x) \to$ ____

Other key characteristics

$y = \frac{1}{2}x^2$

$y = 2x^2$

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

$R: [0, +\infty)$

$y = (x - 2)^2$

$y = -x^2$

# Cubic Functions
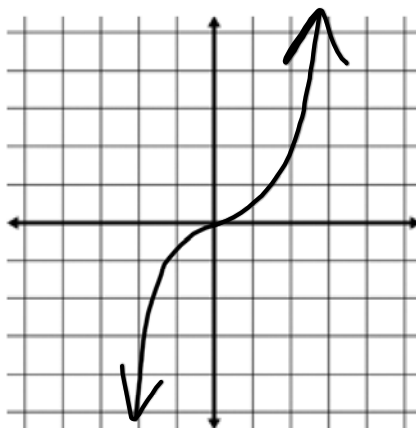
*How do I recognize from a(n)...??*

| EQUATION | GRAPH | TABLE OF VALUES |
|----------|-------|-----------------|
| $y = x^3$ | swoosh ½ parabola | |

Domain     $(-\infty, +\infty)$

Range     $(-\infty, +\infty)$

Increasing interval _____

Decreasing interval _____

End behavior     as $x \to \infty$, $f(x) \to$ _____

as $x \to -\infty$, $f(x) \to$ _____

Other key characteristics

$$y = x^3 + 2$$
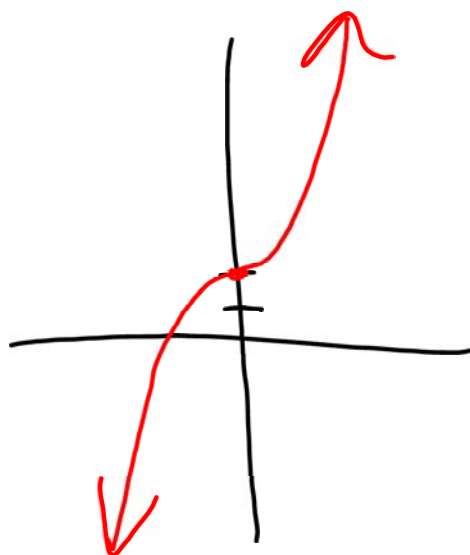
# Absolute Value Functions

*How do I recognize from a(n)...??*

| EQUATION | GRAPH | TABLE OF VALUES |
|---|---|---|
| $y = |x|$ | V-shape | |

Domain $(-\infty, +\infty)$

Range $[0, +\infty)$

Increasing interval _____

Decreasing interval _____

End behavior

as $x \to \infty$, $f(x) \to$ ____

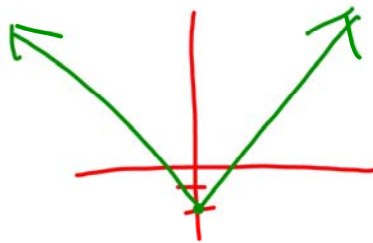as $x \to -\infty$, $f(x) \to$ ____

Other key characteristics

## Transformations of
# Absolute Value Functions

$y = \frac{1}{2}|x|$ or $\quad y = \left|\frac{1}{2}x\right|$
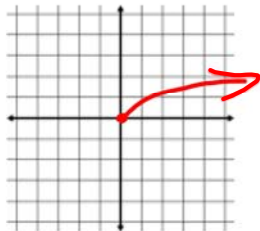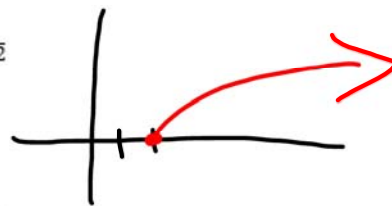
$y = |x - 2|$

$y = |x| - 2$

$y = -|x|$

# Radical Functions

## Transformations of
# Radical Functions

$y = \sqrt{x - 2}$

$y = \sqrt{x} - 2$

*How do I recognize from g(n)...??*

| EQUATION | GRAPH | TABLE OF VALUES |
|---|---|---|
| $y = \sqrt{x}$ | Side Parabola cut ½ | |

Domain     $[0, +\infty)$

Range     $[0, +\infty)$

Increasing interval    _____

Decreasing interval    _____

End behavior     as $x \to \infty,\ f(x) \to$ \_\_\_
           as $x \to -\infty, f(x) \to$ \_\_\_

Other key characteristics

$y = 2\sqrt{x}$

$y = -\sqrt{x}$

Practice:

Review # 6, 7, 13 (on front)

# 18, 26 (on back)