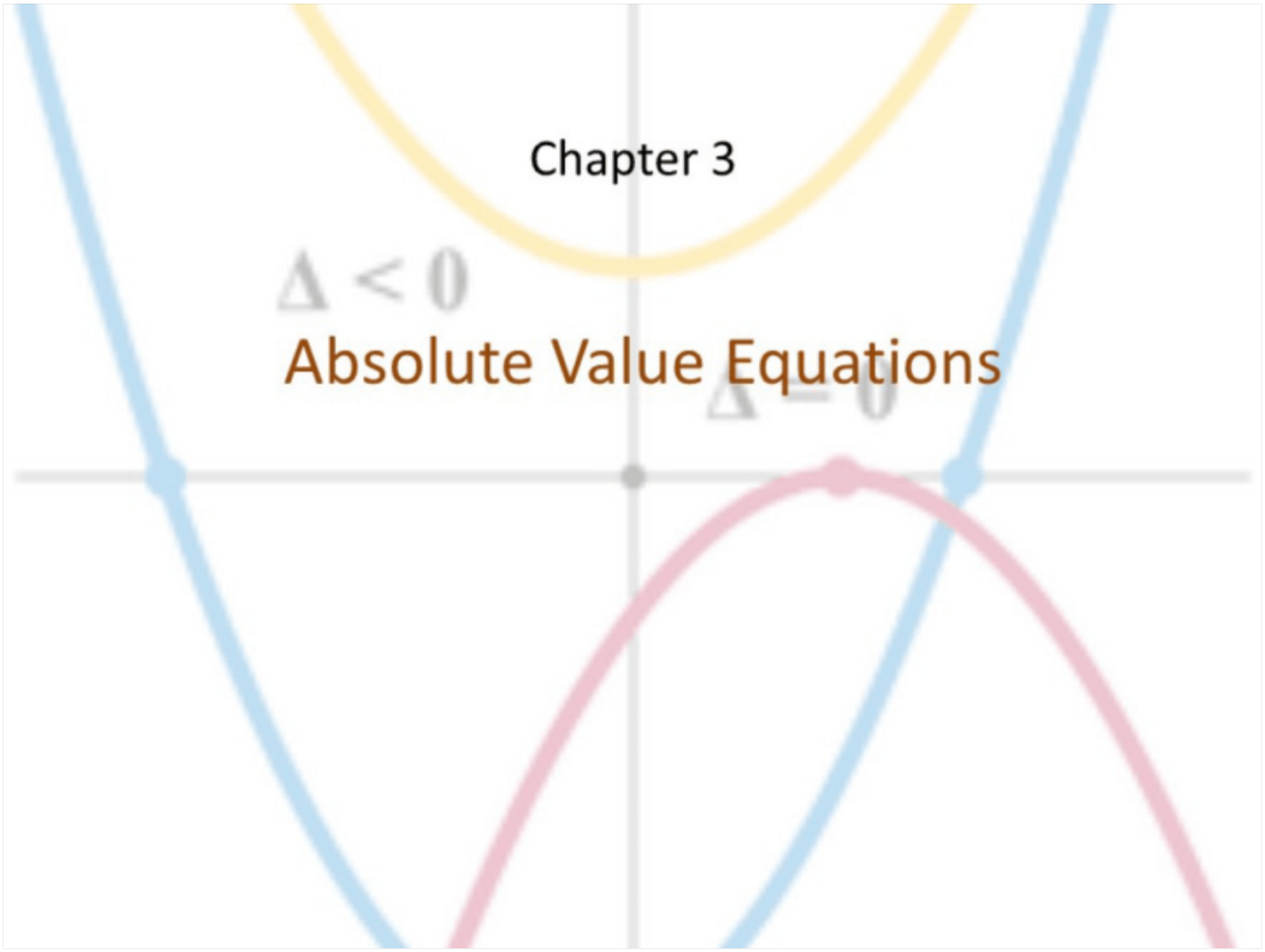
Chapter 3
Δ < 0
Absolute Value Equations
Δ = 0

Objective

Students will...

- Be able to use inverse operations to solve absolute value equations.

Absolute Value Equations

Recall that absolute value of a real number x is the non-negative value of x. Namely, $|x| = x$ for $x > 0$, and $|x| = -x$, for $x < 0$.

Ex. $|3| = 3$

Ex. $|-3| = -(-3) = 3$

ex. $|x| = -1$

No sol

Note: Another way to think about absolute value is considering them as **distance from zero**.

Solving Absolute Value Equations

When solving absolute value equations, we still use inverse operations. However, since absolute value also includes the negative side of things, we need to consider both the positive and negative cases.

Ex. Solve for x.

1. $|x| = 3$

$x = 3$

$x = -3$

2. $|x - 2| = 4$

$x - 2 = 4$

$+2 \quad +2$

$x = 6$

$x - 2 = -4$

$+2 \quad +2$

$x = -2$

3. $|2x - 1| = 5$

$2x - 1 = 5$

$+1 \quad +1$

$\frac{2x}{2} = \frac{6}{2}$

$x = 3$

$2x - 1 = -5$

$+1 \quad +1$

$\frac{2x}{2} = \frac{-4}{2}$

$x = -2$

Solving Absolute Value Equations

Keep in mind that we still need to solve in reverse order of operations. Again, think "outside-in."

Ex. Solve for x.

1. $2|x-2| = 8$

$|x-2| = 4$

$x-2=4$ | $x-2=-4$

$x=6$ | $x=-2$

2. $3|x+2| - 6 = -9$

$+6 \quad +6$

$3|x+2| = -3$

$|x+2| = -1$

No sol.

Homework Due 10/25

Solving Absolute Value Equations WKSHT