# C11 - 7.3 - $|x| = c$ Equations Absolute Value Notes

**Solve algebraically**

$|x + 2| = 4$

"+" case:                                              "−" case:

$+(x + 2) = 4$                                         $-(x + 2) = 4$
$x + 2 = 4$                                            $-x - 2 = 4$
$\boxed{x = 2}$                                        $-x = 6$
                                                       $\boxed{x = -6}$

Check your answer.

$|x + 2| = 4$                   $|-6 + 2| = 4$
$|2 + 2| = 4$                   $|-4| = 4$
$|4| = 4$   ✓                   $|-4| = 4$   ✓

**Solve graphically.**

$|x + 2| = 4$              Left hand side (LHS) = Right hand side (RHS)

$y = |x + 2|$

$y = 4$

y=Left hand side (LHS)

y=Right hand side (RHS)

"+" case:                "−" case:

$y_1 = +(x + 2)$         $y_2 = -(x + 2)$
$\boxed{y_1 = x + 2}$    $\boxed{y_2 = -x - 2}$                $\boxed{y_3 = 4}$

$|x + 2| = 4$



$y_2 = -x - 2$          $y_1 = x + 2$

$y_3 = 4$

$(-6, 4)$          $(2, 4)$