36. D: All Real Numbers
R: $y \geq 0$

$y = |x+4|$

37. $y = |x-5|$
Range $y \geq 0$

38. $y = |x| + 2$
R: $y \geq 2$

39. $y = |x| - 4$
R $y \geq -4$

40. $y = -|x+4|$
$\wedge$ R: $y \leq 0$

41. $y = -|x-5|$
R $y \leq 0$

42. $y = -|x| + 2$
R $y \leq 2$

43. $y = -|x| - 4$
R $y \leq -4$

44. $y = 4|x|$ Vertex (0,0)
R $y \geq 0$

45. $y = \frac{1}{2}|x|$ Vertex (0,0)
R $y \geq 0$

46. $y = 4|x| - 1$
R $y \geq -1$

47. $y = 4|x-1|$ (1,0)
R $y \geq 0$ Opens upward

61. a) $y = |x|$
$y = |x+5| - 2$

b) $y = -|x| + 5$

c) $y = -|x| + 2$

6.5 Absolute Value

Equation or

Ex. $|x+3| = 5$

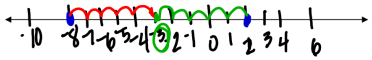
$|5|=5$

$|-5|=5$

$x+3=5$ or $x+3=-5$

-3 -3 -3 -3

$x=2$ or $x=-8$



$y=|x+3|$ left 3 units

$y=|x-3|$

$|x+3|=5$

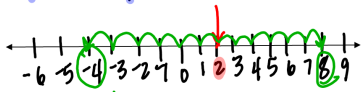
$|x-3|=5$

The distance from -3 is 5

$y=|x-2|$

$|x-2|=6$

The distance from 2 is 6



$x=-4$ or $x=8$

$|x-2|=6$

$+2$ $+2$ $+2$ $+2$

$x-2=6$ or $x-2=-6$

$x=8$ or $x=-4$

$|x-5|=-3$

No Solution

The distance away from -5 is -3

$+5$ $+5$ $+5$ $+5$

$x-5=-3$ or $x-5=3$

$x=2$ or $x=8$

Less Than

$|x-4| \leq 3$

The distance from 4 is less than 3

$1 \leq x \leq 7$

Less Than and

$|x-4| \leq 3$

$+4 \quad +4 \quad +4$

$-3 \leq x-4 \leq 3$

$1 \leq x \leq 7$

$|x+6| \leq -5$

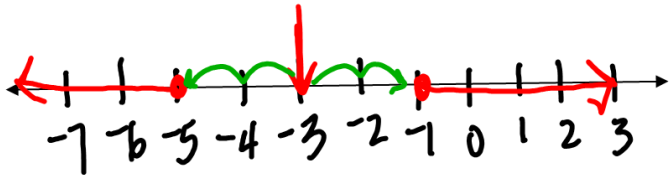
No Solution

Greater Than or

$|x+3| \geq 2$

$|x--3| \geq 2$

The distance away from -3 is greater than 2



$|x+3| \geq 2$ OR

$x+3 \geq 2$ or $x+3 \leq -2$

$x \geq -1$ or $x \leq -5$

p 305
18-38 E