

### 2.7 Graphing Inequalities

**Inequality Symbols:**  $\geq, \leq$  Solid;  $>, <$  dotted

1. Graph  $y = -3x + 8$  and  $y \geq -3x + 8$

2. Graph  $x - 2y = 4$  and  $x - 2y < 4$

$x - 2y = 4 \Rightarrow -2y = -x + 4 \Rightarrow y = \frac{1}{2}x - 2$

$x - 2y < 4 \Rightarrow -2y < -x + 4 \Rightarrow y > \frac{1}{2}x - 2$

3. Graph  $x = 3$ ,  $x > 3$ ,  $y = -2$ , and  $y \leq 2$

### Absolute Value Functions and Inequalities

4. Graph:  $y = |x|$  (V-Shaped)

$y = |x| + 1$

$y = |x + 3|$

5. Graph:  $y \geq |x| + 3$

$y < |x - 2|$

**Test (0,0) for  $y \geq |x| + 3$ :**

$$\frac{0 \geq |0| + 3}{0 \geq 3}$$

False

**Test (4,2) for  $y < |x - 2|$ :**

$$\frac{-2 < |4 - 2|}{-2 < 2}$$

True