

27. Determine whether the lines are parallel, perpendicular, or neither.

$$-27x - 3y = 6$$

$$-9x - y = 15$$

$$y = mx + b$$

$$\begin{array}{r} -27x - 3y = 6 \\ +27x \qquad +27x \\ \hline \end{array}$$

$$\frac{-3y}{-3} = \frac{27x + 6}{-3}$$

$$y = -9x - 2$$

$$m = -9$$

$$\begin{array}{r} -9x - y = 15 \\ +9x \qquad +9x \\ \hline \end{array}$$

$$\frac{-y}{-1} = \frac{9x + 15}{-1}$$

$$y = -9x - 15$$

$$m = -9$$

parallel lines

28. Solve: $x^2 - 8x + 41 = 0$

$$a=1 \quad b=-8 \quad c=41$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(41)}}{2(1)}$$

$$= \frac{8 \pm \sqrt{64 - 164}}{2}$$

$$= \frac{8 \pm \sqrt{-100}}{2}$$

$$\frac{\sqrt{-100}}{10i \sqrt{-1} \cdot 10} = \frac{10i}{100} = \frac{i}{10}$$

$$= \frac{8 \pm 10i}{2} = 4 \pm 5i$$

$$4 + 5i \quad \text{or} \quad 4 - 5i$$