

$$4x - y = 7$$

$$y = 4x - 7$$

$$(0, -7)$$

$$-4x + y = 20$$

$$y = 4x + 20$$

$$\text{slope} = 4$$

$$\perp \text{slope} = -\frac{1}{4}$$

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

$$-7 = -\frac{1}{4}(0) + C$$

$$-7 = C$$

$$y = -\frac{1}{4}x - 7$$

$$y = 4x + 20$$

$$4 \left(-\frac{1}{4}x - 7 = 4x + 20 \right)$$

$$-x - 28 = 16x + 80$$

$$-17x = 108$$

$$x = \frac{-108}{17}$$

$$y = 4 \left(\frac{-108}{17} \right) + 20$$

$$y = \frac{-432}{17} + 20$$

$$y = \frac{-92}{17}$$

$$(0, -7)$$

$$\left(\frac{-108}{17}, \frac{-92}{17} \right)$$

$$d = \sqrt{\left(0 + \frac{108}{17}\right)^2 + \left(-7 + \frac{92}{17}\right)^2}$$

$$= \sqrt{\frac{11664}{289} + \frac{729}{289}}$$

$$= \sqrt{\frac{12393}{289}} = \frac{\sqrt{12393}}{17} = \frac{27\sqrt{17}}{17}$$