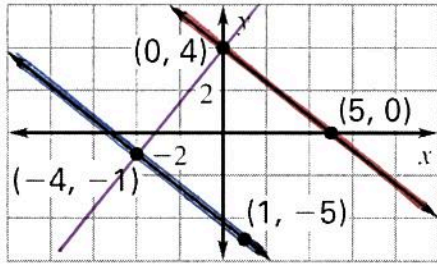


**SHOW ALL WORK!**

Find the distance between the two parallel lines *algebraically*. Round answers to the nearest tenth.

1.



$$m = \frac{-4}{5}$$

$$m = \frac{-4}{5} \quad b = 4$$

$$y + 1 = \frac{-4}{5}(x + 4)$$

$$y = \frac{-4}{5}x + 4$$

$$y + 1 = \frac{-4}{5}x - \frac{16}{5}$$

$$m_{\perp} = \frac{5}{4} \quad b = 4$$

$$y = \frac{-4}{5}x - \frac{16}{5} - \frac{5}{5}$$

$$y = \frac{5}{4}x + 4$$

$$y = \frac{-4}{5}x - \frac{21}{5}$$

OK. to use graphical method here, in other words, this one doesn't NEED a system

$$\left( \frac{5}{4}x + 4 = \frac{-4}{5}x - \frac{21}{5} \right) \cdot 20$$

$$25x + 80 = -16x - 84$$

$$41x = -164$$

$$x = -4$$

$$\frac{5}{4}(-4) + 4 = y$$

$$-5 + 4 = y$$

$$-1 = y$$

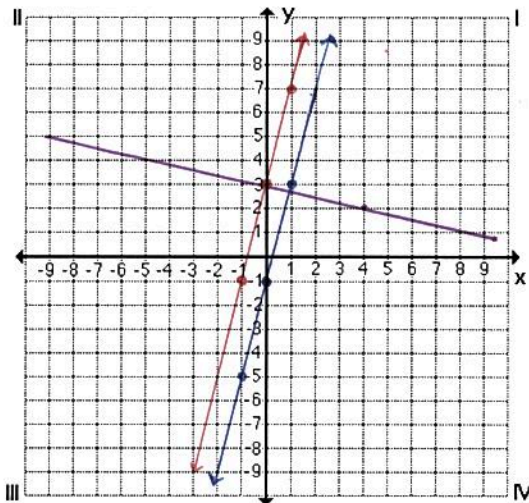
$$(0, 4), (-4, -1)$$

$$d = \sqrt{(0+4)^2 + (4+1)^2}$$

$$= \sqrt{16+25} = \sqrt{41} \approx 6.4$$

2.

$y = 4x - 1$  and  $y = 4x + 3$



$$m_{\perp} = -\frac{1}{4} \quad b = 3$$

$$y = -\frac{1}{4}x + 3$$

$$\left( 4x - 1 = -\frac{1}{4}x + 3 \right) \cdot 4$$

$$16x - 4 = -x + 12$$

$$17x = 16$$

$$x = \frac{16}{17}$$

$$4\left(\frac{16}{17}\right) - 1 = y$$

$$\frac{64}{17} - \frac{17}{17} = y$$

$$\frac{47}{17} = y$$

$$(0, 3), \left(\frac{16}{17}, \frac{47}{17}\right)$$

$$d = \sqrt{\left(\frac{16}{17} - 0\right)^2 + \left(3 - \frac{47}{17}\right)^2}$$

$$d = \sqrt{\frac{256}{289} + \frac{16}{289}}$$

$$d = \sqrt{\frac{272}{289}} = \sqrt{\frac{16}{17}} = \frac{4}{\sqrt{17}} = \frac{4\sqrt{17}}{17} \approx 1.0$$