

5. Find the distance to the line  $3x - 2y + 12 = 0$  from the point  $(2, -2)$ .

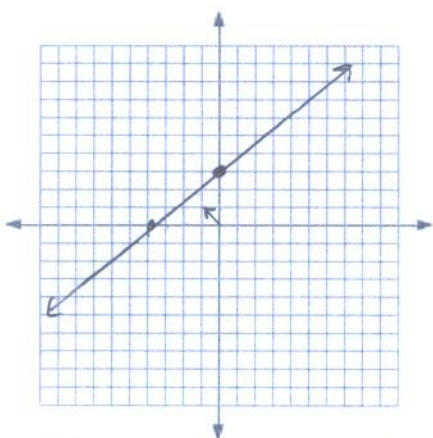
$$d = \frac{|3(2) - 2(-2) + 12|}{\sqrt{4+4}} = \frac{|6+4+12|}{\sqrt{8}} = \frac{22}{\sqrt{8}}$$

5.  $\frac{22}{\sqrt{8}}$

6. Use the line  $3x - 4y + 12 = 0$  to answer the following questions.

a. Sketch the line and positive unit normal.

$$3x - 4y = -12$$



$$\left\langle -\frac{3}{5}, \frac{4}{5} \right\rangle$$

$$\frac{12}{5}$$

b. Find the positive unit normal.

b.  $\left\langle -\frac{3}{5}, \frac{4}{5} \right\rangle$

c. Find the distance from  $(0,0)$  to the line.

c.  $\frac{12}{5}$

d. Find the "footprint" where the positive unit normal "hits" the line.

d.  $\left(-\frac{36}{25}, \frac{48}{25}\right)$

$$\left(\frac{36}{25}, \frac{48}{25}\right)$$