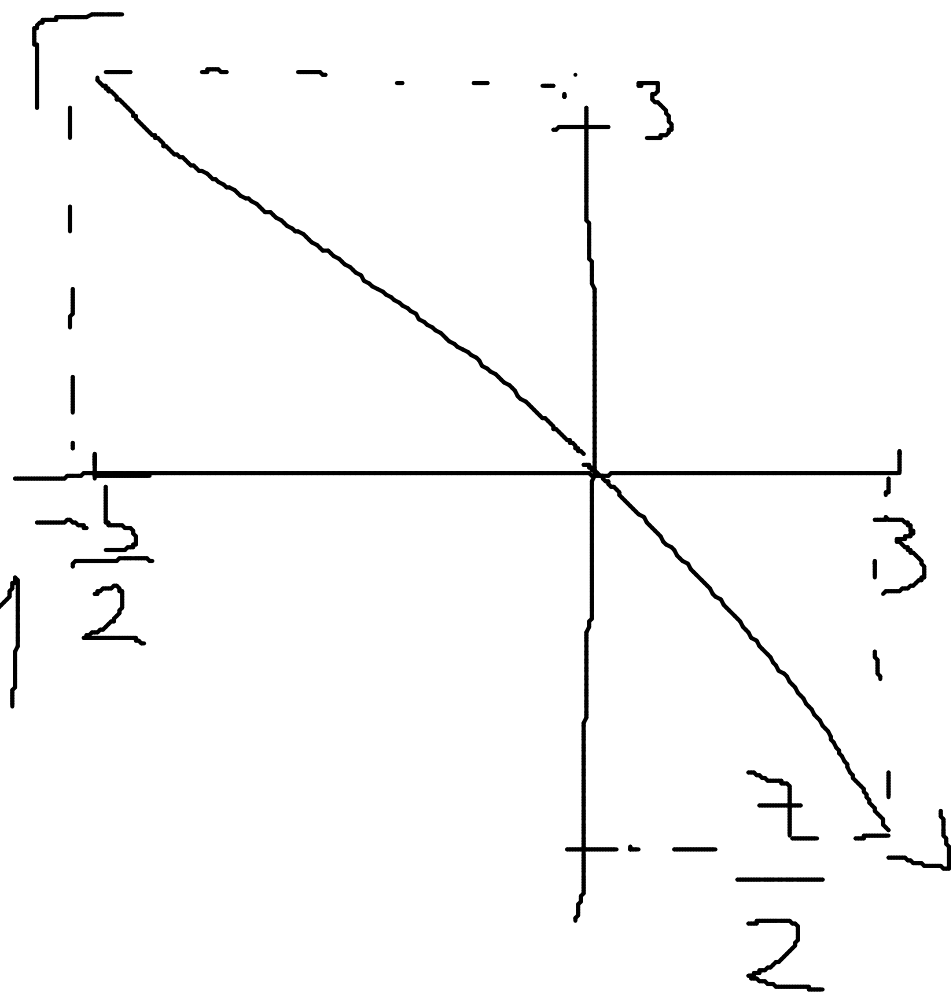


$$\vec{v} = \left(-\frac{5}{2}, 3 \right)$$

$$\vec{w} = \left(3, \frac{7}{2} \right)$$

$$\vec{v} \cdot \vec{w} = ?$$

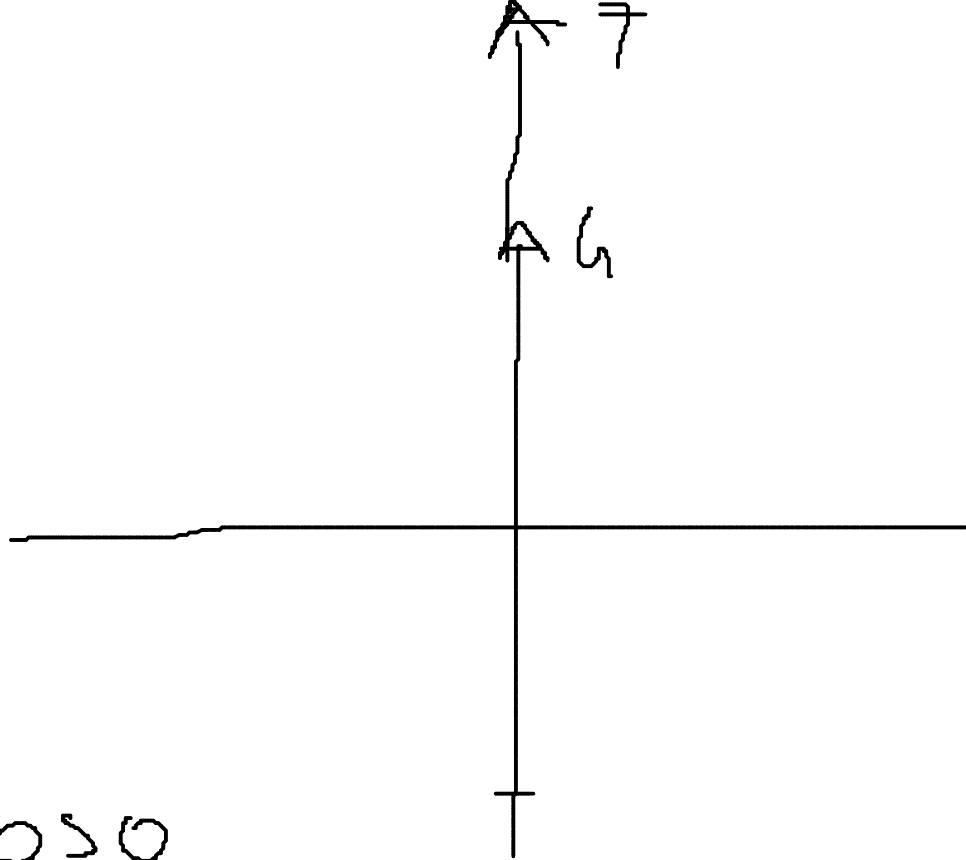


$$v_x \cdot v_x + v_y \cdot v_y$$

$$-\frac{5}{2} \cdot 3 + 3 \left(-\frac{7}{2} \right)$$

$$-\frac{15}{2} + \left(-\frac{21}{2} \right) = -18$$

$$\vec{a} = (0, 4)$$
$$\vec{b} = (0, 7)$$



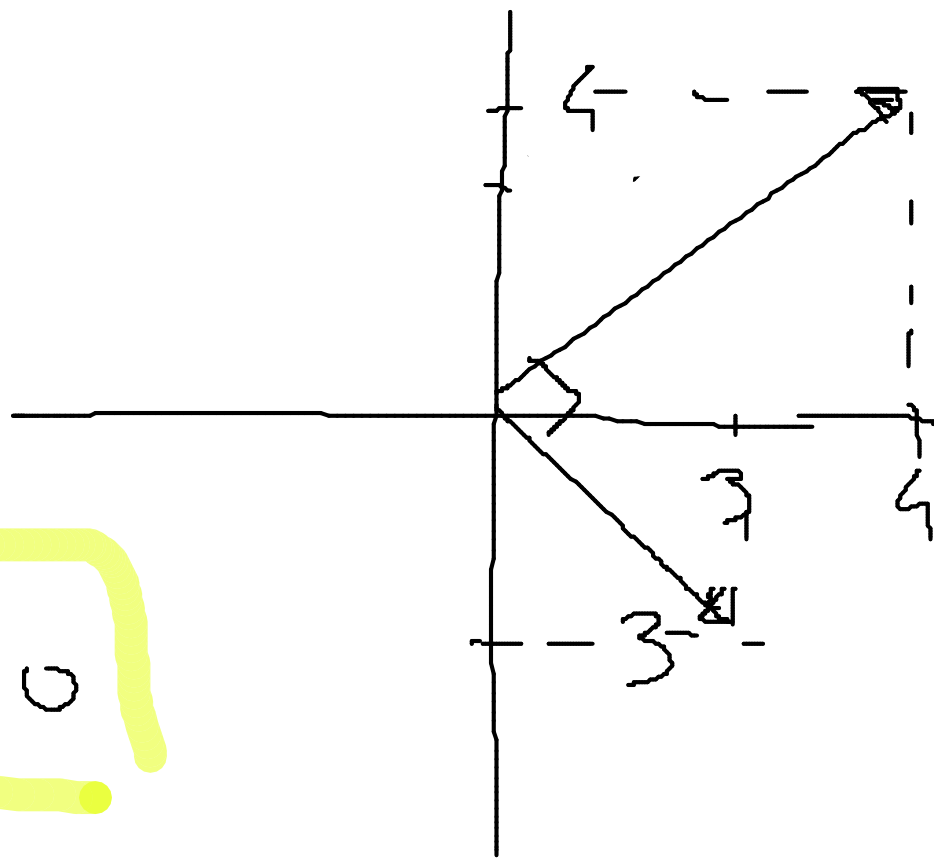
$$\vec{a} \cdot \vec{b} = a \cdot b \cdot \cos \theta$$
$$= 4 \cdot 7 \cdot \cos \theta = 28$$
$$\cos \theta = 1$$

$$a_x \cdot b_x + a_y \cdot b_y =$$
$$0 + 28 = 28$$

$$\vec{v} = (3, -3)$$

$$\vec{w} = (4, 4)$$

$$\vec{v} \cdot \vec{w} = ?$$



$$\vec{v} \cdot \vec{w} = 3 \cdot 4 + (-3) \cdot 4 = 0$$

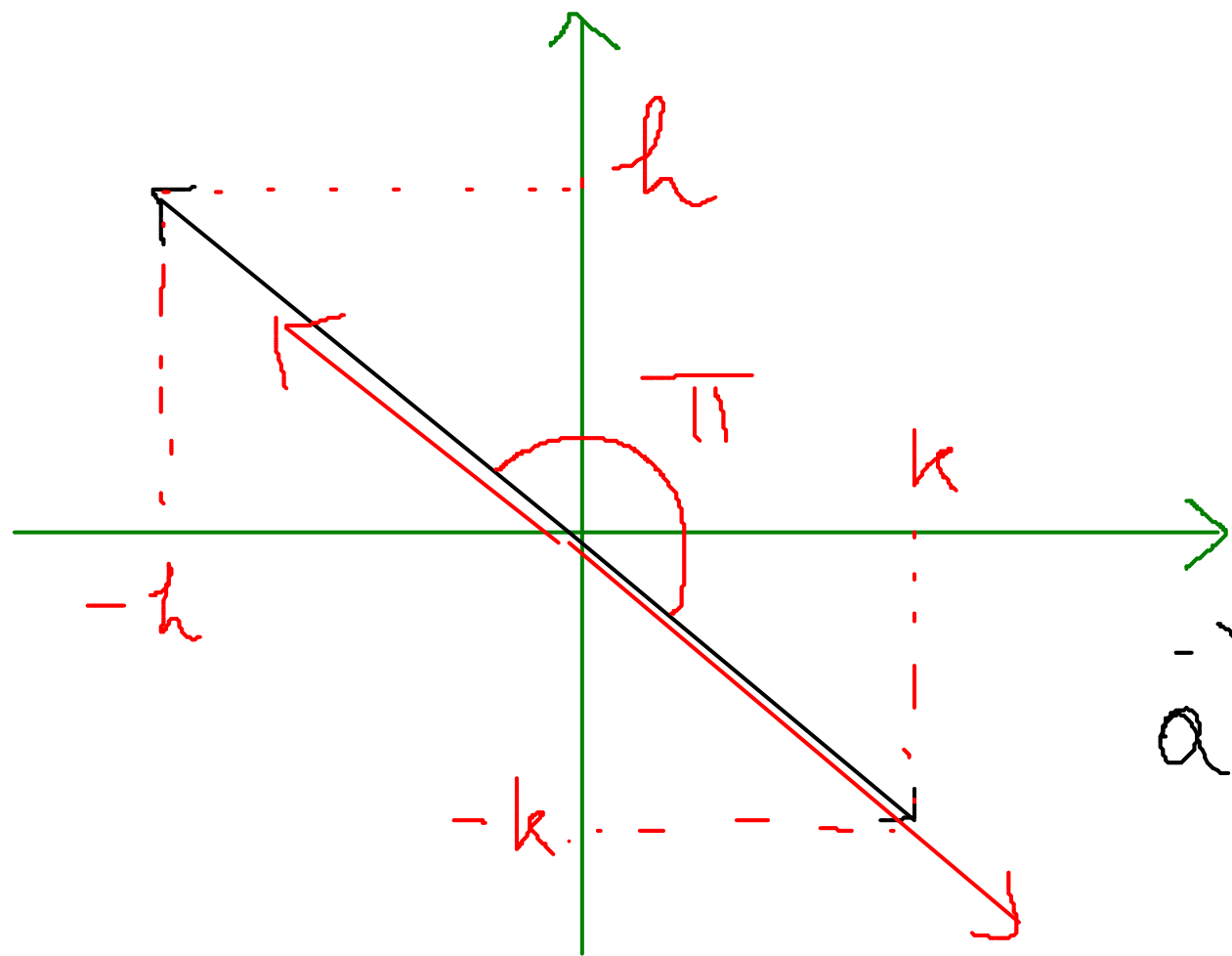
$$|\vec{v}| = \sqrt{3^2 + (-3)^2} = \sqrt{18} = 4,24$$

$$|\vec{w}| = \sqrt{4^2 + 4^2} = \sqrt{32} = 5,65$$

$$\vec{v} \cdot \vec{w} = 4,24 \cdot 5,65 \cdot \cos \frac{\pi}{2} = 0$$

$$\vec{a} = (k, -k)$$
$$\vec{b} = (-h, h)$$

$$h > 0$$
$$k > 0$$



$$\cos \pi = -1$$

$$|\vec{a}| = k\sqrt{2}$$

$$|\vec{b}| = h\sqrt{2}$$

$$\vec{a} \cdot \vec{b} = k\sqrt{2} \cdot h\sqrt{2} \cdot \cos \pi$$
$$= 2kh(-1) = -2kh$$

$$\begin{aligned}
 a^{-1} \cdot b^{-1} &= a_x b_x + a_y b_y = \\
 &= k(-h) + (-k) \cdot h \\
 &= -kh - kh = -2kh
 \end{aligned}$$

$$\begin{array}{l}
 h < 0 \\
 k < 0
 \end{array}$$



$$a^{-1} \cdot b^{-1} = -2h \cdot k$$

$$\begin{array}{l}
 |k| = -k \\
 k < 0
 \end{array}$$

$$a^{-1} \cdot b^{-1} = |a^{-1}| |b^{-1}| \cos 0$$

$$= 2(-k)h \quad 1 = -2h \cdot k$$

$$\vec{a} = (h, 2h)$$

$$\vec{b} = (-k, 2k)$$

$$\vec{a} \cdot \vec{b} = ?$$

$$\vec{v} = (3h, k)$$

$$\vec{w} = (-k, 3k)$$

$$\vec{v} \cdot \vec{w} = ?$$