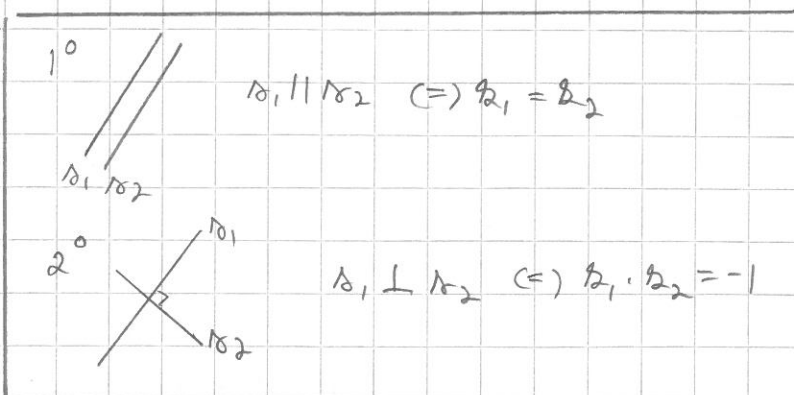


Siten



YHDENSUUNTAISUUSEHTO

KOHTISUORUUSEHTO

Esim. Ovatko suorat $5x - 7y + 2 = 0$ ja $7x + 5y + 1 = 0$ kohtisuoria?

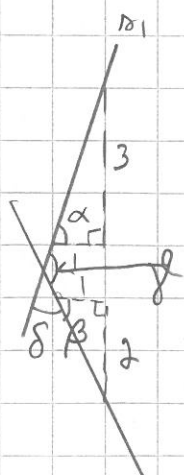
Ratk. $5x - 7y + 2 = 0 \Leftrightarrow 5x + 2 = 7y \quad | :7 \Leftrightarrow y = \frac{5}{7}x + \frac{2}{7} \Rightarrow k_1 = \frac{5}{7}$
 $7x + 5y + 1 = 0 \Leftrightarrow 5y = -7x - 1 \quad | :5 \Leftrightarrow y = -\frac{7}{5}x - \frac{1}{5} \Rightarrow k_2 = -\frac{7}{5}$
 $\Rightarrow k_1 \cdot k_2 = \frac{5}{7} \cdot \left(-\frac{7}{5}\right) = -1 \Rightarrow$ ovat kohtisuoria

8.13 $(-4, -7)$

a) $2x - 5y + 3 = 0 \Leftrightarrow 2x + 3 = 5y \quad | :5 \Leftrightarrow y = \frac{2}{5}x + \frac{3}{5} \Rightarrow k = \frac{2}{5}$
 $\Rightarrow$ suora: $y - (-7) = \frac{2}{5}(x - (-4)) \Leftrightarrow y + 7 = \frac{2}{5}x + \frac{8}{5}$
 $\Leftrightarrow y = \frac{2}{5}x - \frac{27}{5}$

b) $4x + 3y - 9 = 0 \Leftrightarrow 3y = -4x + 9 \quad | :3 \Leftrightarrow y = -\frac{4}{3}x + 3 \Rightarrow k_1 = -\frac{4}{3}$
 $k_1 \cdot k_2 = -1 \Leftrightarrow k_2 = -\frac{1}{k_1} = -\frac{1}{-\frac{4}{3}} = \frac{3}{4}$
 $\Rightarrow$ suora: $y - (-7) = \frac{3}{4}(x - (-4)) \Leftrightarrow y + 7 = \frac{3}{4}x + 3$
 $\Leftrightarrow y = \frac{3}{4}x - 4$

8.14 $3x - y + 2 = 0 \Leftrightarrow 3x + 2 = y \Rightarrow k_1 = 3$
 $4x + 2y - 1 = 0 \Leftrightarrow 2y = -4x + 1 \quad | :2 \Leftrightarrow y = -2x + \frac{1}{2} \Rightarrow k_2 = -2$



$$\tan \alpha = \frac{3}{1} = 3 = k_1 \Rightarrow \alpha \approx 71.57^\circ$$

$$\tan \beta = -\frac{2}{1} = -2 = k_2 \Rightarrow \beta \approx -63.43^\circ$$

$$\gamma = \alpha - \beta = 71.57^\circ - (-63.43^\circ) = 135^\circ > 90^\circ$$

$$\Rightarrow$$
 suorien välinen kulma $\delta = 180^\circ - \gamma = 180^\circ - 135^\circ = \underline{45^\circ}$