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## Opgave 210

$$AB: y = -2x$$

$$BC: x = -5$$

$$CD: y = -4$$

$$AD: y = 4x$$

Finder punkt A

$$A(?, ?)$$

$$y = -2x$$

$$y = 4x$$

$$-2x = 4x \quad \text{Sætter ligningen mod hinanden}$$

$$x = 0$$

$$y = 4 \cdot (0) \quad \text{Indsætter den funde } x$$

$$y = 0$$

$$A(0, 0)$$

Finder punkt B

$$B(?, ?)$$

$$y = -2x$$

$$x = -5$$

$$y = -2 \cdot (-5) \quad \text{Indsætter } x \text{ i første ligning}$$

$$y = 10$$

$$B(-5, 10)$$

Finder punkt C

$$C(?, ?)$$

$$x = -5$$

$$y = -4$$

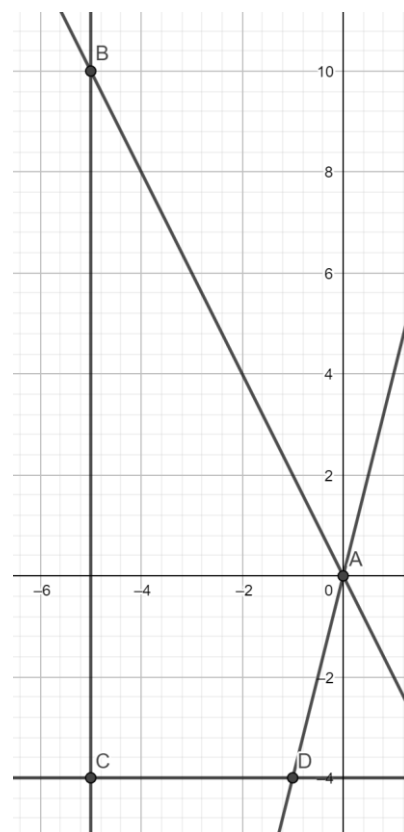
$$C(-5, -4)$$

Finder punkt D

$$D(?, ?)$$

$$y = -4$$

$$y = 4x$$



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$$-4 = 4x \text{ Sætter dem over for hindanden}$$

$$x = -1$$

$$D(-1, -4)$$

Find længder af siderne

$$A(0,0)$$

$$B(-5,10)$$

$$C(-5,-4)$$

$$D(-1,-4)$$

$$a = \sqrt{(A_x - B_x)^2 + (A_y - B_y)^2}$$

$$a = \sqrt{(0 - (-5))^2 + (0 - 10)^2} \approx 11,18034$$

$$b = \sqrt{(B_x - C_x)^2 + (B_y - C_y)^2}$$

$$b = \sqrt{((-5) - (-5))^2 + (10 - (-4))^2} = 14$$

$$c = \sqrt{(C_x - D_x)^2 + (C_y - D_y)^2}$$

$$c = \sqrt{((-5) - (-1))^2 + ((-4) - (-4))^2} = 4$$

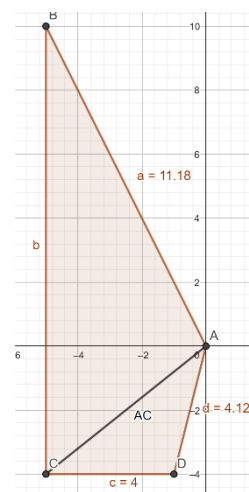
$$d = \sqrt{(D_x - A_x)^2 + (D_y - A_y)^2}$$

$$d = \sqrt{((-1) - 0)^2 + ((-4) - 0)^2} \approx 4,123106$$

Vi skal også finde AC for at kunne finde alle vinkler

$$ac = \sqrt{(A_x - C_x)^2 + (A_y - C_y)^2}$$

$$ac = \sqrt{(0 - (-5))^2 + (0 - (-4))^2} \approx 6,403124$$



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### Finder vinklerne

$$\angle D = \cos^{-1} \left( \frac{d^2 + c^2 - ac^2}{2 \cdot d \cdot c} \right)$$

$$\angle D = \cos^{-1} \left( \frac{4.1^2 + 4^2 - 6.4^2}{2 \cdot 4.1 \cdot 4} \right) \approx 104,3873$$

Finder halvdelen af vinkel C, og så finder den anden halvdel senere

$$\angle C1 = \cos^{-1} \left( \frac{ac^2 + c^2 - d^2}{2 \cdot ac \cdot c} \right)$$

$$\angle C1 = \cos^{-1} \left( \frac{6.4^2 + 4^2 - 4.12^2}{2 \cdot 6.4 \cdot 4} \right) \approx 38,65064$$

$$\angle B = \cos^{-1} \left( \frac{a^2 + b^2 - ac^2}{2 \cdot a \cdot b} \right)$$

$$\angle B = \cos^{-1} \left( \frac{11.18^2 + 14^2 - 6.4^2}{2 \cdot 11.18 \cdot 14} \right) \approx 26,5483$$

Finder den anden halvdel af vinkel C

$$\angle C2 = \cos^{-1} \left( \frac{b^2 + ac^2 - a^2}{2 \cdot b \cdot ac} \right)$$

$$\angle C2 = \cos^{-1} \left( \frac{14^2 + 6.4^2 - 11.18^2}{2 \cdot 14 \cdot 6.4} \right) \approx 51,33108$$

Ligger C1 og C2 sammen så jeg for hele C

$$\angle C = \angle C1 + \angle C2$$

$$\angle C = 38.7 + 51.3$$

$$\angle C = 90$$

Finder den sidste vinkel A

$$360 = \angle A + \angle B + \angle C + \angle D$$

$$\angle A = 360 - \angle B - \angle C - \angle D$$

$$\angle A = 360 - 26.54 - 90 - 104.4$$

$$\angle A = 139,06$$

Finder areal af den nederste trekant

$$A1 = \frac{c \cdot d \cdot \sin(\angle D)}{2}$$

$$A1 = \frac{4 \cdot 4.12 \cdot \sin(104)}{2} \approx 7,995237$$

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Finder areal af den øverste trekant

$$A_2 = \frac{a \cdot b \cdot \sin(\angle B)}{2}$$

$$A_2 = \frac{11.18 \cdot 14 \cdot \sin(26.57)}{2} \approx 35,00498$$

Finder hele arealet

$$A = A_1 + A_2$$

$$A = 8 + 35$$

$$A = 43$$