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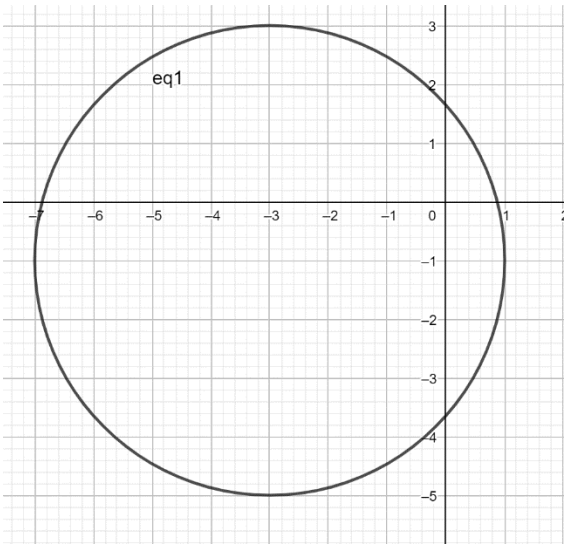
Opgave 233

$$a: (x+3)^2 + (y+1)^2 = 16$$



a) Find punkter der skrærer med perifirien hvis x er -5

$$P_0(-5,0)$$

$$(-5+3)^2 + (y+1)^2 = 16$$
$$4 + y^2 + 2y + 1 = 16 \quad Gange\ parentes$$
$$4 + y^2 + 2y + 1 - 16 = 0 \quad Flyt\ 16$$
$$y^2 + 2y - 11 = 0 \quad Redcurer$$

$$a = 1$$
$$b = 2$$
$$c = -11$$

$$y_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$y_{1,2} = \frac{-2 \pm \sqrt{2^2 - 4 \cdot 1 \cdot (-11)}}{2 \cdot 1}$$

$$y_1 = \left(-2 \cdot \sqrt{3}\right) - 1$$
$$y_1 = -4{,}464102$$
$$P_1(-5, -4.45)$$

$$y_2 = 2 \cdot \sqrt{3} - 1$$
$$y_2 = 2{,}464102$$
$$P_2(-5, 2.46)$$

b) Find skærings punkter på akserne

$$P_x(0, ?)$$
$$P_y(?, 0)$$

$$(x+3)^2 + (y+1)^2 = 16$$

Løser med hensyn til P_x

$$(0+3)^2 + (y+1)^2 = 16$$
$$9 + y^2 + 2y + 1 = 16$$
$$9 + y^2 + 2y + 1 - 16 = 0$$
$$y^2 + 2y - 6 = 0$$

$$a = 1$$
$$b = 2$$
$$c = -6$$

$$y_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$y_{1,2} = \frac{-2 \pm \sqrt{2^2 - 4 \cdot 1 \cdot (-6)}}{2 \cdot 1}$$

$$y_1 = \sqrt{7} - 1$$
$$y_1 = 1{,}645751$$
$$P_{x1}(0, 1.6)$$

$$y_2 = \left(-\sqrt{7}\right) - 1$$
$$y_2 = -3{,}645751$$
$$P_{x2}(0, -3.6)$$

Løser med hensyn til P_y

$$(x+3)^2 + (0+1)^2 = 16$$
$$x^2 + 6x + 9 + 1 = 16$$
$$x^2 + 6x + 9 + 1 - 16 = 0$$
$$x^2 + 6x^2 - 6 = 0$$

$$a = 1$$
$$b = 6$$
$$c = -6$$

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$x_{1,2} = \frac{-6 \pm \sqrt{6^2 - 4 \cdot 1 \cdot (-6)}}{2 \cdot 1}$$

$$x_1 = \sqrt{15} - 3$$
$$x_1 = 0{,}8729833$$
$$P_{y1}(0.87, 0)$$

$$x_2 = \left(-\sqrt{15}\right) - 3$$
$$x_2 = -6{,}872983$$
$$P_{y2}(-687, 0)$$

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