



Two lines cross so

$$\left. \begin{array}{l} y = 2x - 3 \\ x(y + 1) = 4 \end{array} \right\}$$

$$x(2x - 3 + 1) = 4$$

$$x(2x - 2) = 4$$

$$2x^2 - 2x = 4$$

$$x^2 - x - 2 = 0$$

$$(x - 2)(x + 1) = 0$$

$$x = 2 \text{ or } x = -1$$

White dot at (2, 1)

Black Dot

$$x^2 - 6x + y^2 = 0 \text{ and } y = 2x - 3$$

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

$$x^2 - 6x + 4x^2 - 12x + 9 = 0$$

$$5x^2 - 18x + 9 = 0$$

Using the calculator solver mode

$$x = 0.6 \text{ or } x = 3$$

so for the black dot $x = 0.6$ and $y = -1.8$

Grey Line

parallel to $y = 2x - 3$

$$y = 2x + 6$$

$$x(2x + 7) = 4$$

$$2x^2 + 7x - 4 = 0$$

$$x = 0.5 \text{ calculator}$$

solver

$$y = 1$$

(0.5, 1)

Tangent

Try $c = 2$

so $y = 2x + 2$

$$x^2 - 6x + (2x + 2)(2x + 2) = 0$$

$$x^2 - 6x + 4x^2 + 4x + 4x + 4 = 0$$

$$5x^2 + 2x + 4 = 0$$

Using the calculator solver mode – no answers

Try $c = 1$

so $y = 2x + 1$

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

$$x^2 - 6x + 4x^2 + 2x + 2x + 1 = 0$$

$$5x^2 - 2x + 1 = 0$$

Using the calculator solver mode – no answers

Try $c = 0$

so $y = 2x$

$$x^2 - 6x + 4x^2 = 0$$

$$5x^2 - 6x = 0$$

Using the calculator solver mode

$$x = 0 \text{ or } 1.2$$

c must be between 0 and 1.2

so $c = 0.6$

so tangent is $y = 2x + 0.6$

1

2

3

4