White Dot

Two lines cross so

\[ y = 2x - 3 \]
\[ x(y + 1) = 4 \]
\[ x(2x - 3 + 1) = 4 \]
\[ x(2x - 2) = 4 \]
\[ 2x^2 - 2x = 4 \]
\[ x^2 - x - 2 = 0 \]
\[ (x - 2)(x + 1) = 0 \]
\[ x = 2 \text{ or } x = -1 \]

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 \( y = 2x - 3 \)
\[ y = 2x + 6 \]
\[ x(2x + 7) = 4 \]
\[ 2x^2 + 7x - 4 = 0 \]
\[ x = 0.5 \text{ calculator solver} \]
\[ y = 1 \]

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**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
\( x = 0 \) or \( 1.2 \)
c must be between 0 and 1.2
so \( c = 0.6 \)
so tangent is \( y = 2x + 0.6 \)