

4.2.5 - One Linear, One Quadratic Equation I

4.2 - Algebra - Solving Equations

Leaving Certificate Mathematics

Ordinary Level & Higher Level



Example 1

Q. Find the intersection point(s) of the lines:

$$\begin{aligned}2x - y &= -7 \\2x^2 + 6x + y &= 7\end{aligned}$$

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$$\begin{aligned}2x - y &= -7 \\ -y &= -7 - 2x\end{aligned}$$

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Sub $y = 2x + 7$ into B.

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$$2x^2 + 6x + y = 7$$

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Answer:

$$\begin{aligned}2x^2 + 6x + y &= 7 \\ 2x^2 + 6x + 2x + 7 &= 7 \\ 2x^2 + 8x + 7 &= 7\end{aligned}$$

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$$\begin{aligned}2x - y &= -7 \\2x^2 + 6x + y &= 7\end{aligned}$$

Answer:

$$\begin{aligned}2x^2 + 6x + y &= 7 \\2x^2 + 6x + 2x + 7 &= 7 \\2x^2 + 8x + 7 &= 7 \\2x^2 + 8x &= 0\end{aligned}$$

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$$\begin{aligned}2x - y &= -7 \\2x^2 + 6x + y &= 7\end{aligned}$$

Answer:

$$\begin{aligned}2x^2 + 6x + y &= 7 \\2x^2 + 6x + 2x + 7 &= 7 \\2x^2 + 8x + 7 &= 7 \\2x^2 + 8x &= 0 \\x^2 + 4x &= 0\end{aligned}$$

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Answer:

$$\begin{aligned}2x^2 + 6x + y &= 7 \\ 2x^2 + 6x + 2x + 7 &= 7 \\ 2x^2 + 8x + 7 &= 7 \\ 2x^2 + 8x &= 0 \\ x^2 + 4x &= 0 \\ x(x + 4) &= 0\end{aligned}$$

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$$\begin{aligned}2x - y &= -7 \\ 2x^2 + 6x + y &= 7\end{aligned}$$

Answer:

$$x(x + 4) = 0$$

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$$\therefore x = 0$$

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$$\begin{aligned}2x - y &= -7 \\ 2x^2 + 6x + y &= 7\end{aligned}$$

Answer:

$$x(x + 4) = 0$$

$$\therefore x = 0$$

$$\therefore y = 2x + 7$$

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$$\begin{aligned}\therefore y &= 2x + 7 \\ &= 2(0) + 7\end{aligned}$$

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$$x(x + 4) = 0$$

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$$\therefore y = 2x + 7$$

$$= 2(0) + 7$$

$$= 0 + 7$$

$$= 7$$

$$\therefore (x, y) = (0, 7)$$

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Answer:

$$x(x + 4) = 0$$

$$\therefore x = 0$$

$$x + 4 = 0$$

$$\therefore y = 2x + 7$$

$$\therefore x = -4$$

$$= 2(0) + 7$$

$$= 0 + 7$$

$$= 7$$

$$\therefore (x, y) = (0, 7)$$

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$$\therefore (x, y) = (0, 7)$$

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$$\begin{aligned}\therefore x &= -4 \\ \therefore y &= 2x + 7 \\ &= 2(-4) + 7 \\ &= -8 + 7\end{aligned}$$

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Answer:

$$x(x + 4) = 0$$

$$\therefore x = 0$$

$$\therefore y = 2x + 7$$

$$= 2(0) + 7$$

$$= 0 + 7$$

$$= 7$$

$$\therefore (x, y) = (0, 7)$$

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$$\therefore x = 0$$

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$$\therefore (x, y) = (0, 7)$$

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\therefore Intersection points: $(0, 7)$ and $(-4, -1)$