TASK

Date:

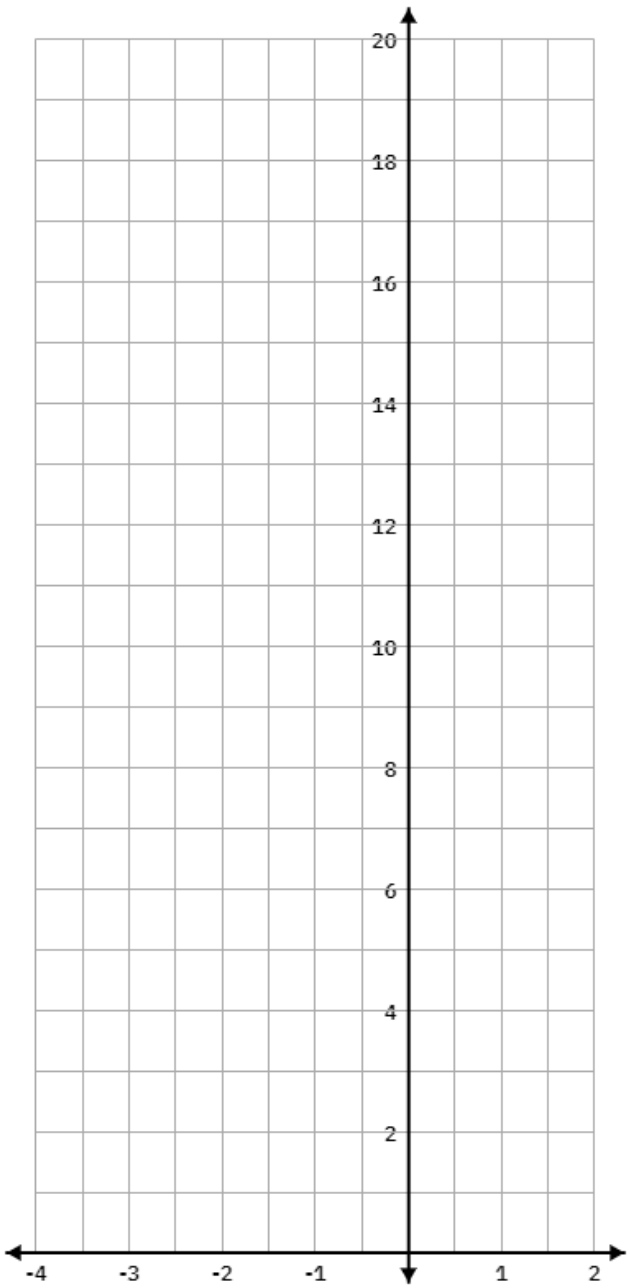
Sketch the following two graphs and write down their points of intersection

$y = x^2 + 2x + 10$

x	-4	-3	-2	-1	0	1	2
y							

$y = -3x + 4$

x	-4	-3	-2	-1	0	1	2
y							



WORKED EXAMPLE

Solving algebraically

Date:

Ceira has answered started this question **correctly**

Solve these equations simultaneously

$$y = x^2 + 2x + 10$$
$$y = -3x + 4$$

line 1 $x^2 + 2x + 10 = -3x + 4$

line 2 $+3x \qquad +3x$

line 3 $x^2 + 5x + 10 = 4$

line 4 $-4 \qquad -4$

line 5 $x^2 + 5x + 6 = 0$

Study the solution carefully and answer these questions

(1) Ceira plans to solve the equation by factorising or using the quadratic formula, explain why she cannot stop at **line 3**.

(2) If the question was:
Solve these equations simultaneously

$$\boldsymbol{y = x^2 + 2x + 10}$$
$$\boldsymbol{y + 3x = 4}$$

What would your first line of working be?

Complete these questions

(1) Solve these equations simultaneously

$$y = x^2 + 2x + 10$$
$$y = -3x + 4$$

$x^2 + 2x + 10 = -3x + 4$

$+3x \qquad +3x$

$x^2 + 5x + 10 = 4$

$-4 \qquad -4$

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

(2) Solve these equations simultaneously

$$y = x^2 + 2x - 7$$
$$y + 1 = x$$

$y = x - 1$

$x^2 + 2x - 7 = x - 1$

(3) Solve these equations simultaneously

$$y = x^2 - x + 2$$
$$y - 3x = 1$$

(4) Solve these equations simultaneously

$$x + y = 5$$
$$xy = 6$$

$y = 5 - x$

$x(5-x) = 6$

$5x - x^2 = 6$

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

(5) Solve these equations simultaneously

$$3x + y = 4$$
$$xy = -4$$

(6) Solve these equations simultaneously

$$x + 2y = 2$$
$$x^2 + y^2 = 1$$

$x = 2 - 2y$

$(2-2y)^2 + y^2 = 1$

	2	$-2y$
2	4	$-4y$
$-2y$	$-4y$	$+4y^2$

$4 - 4y - 4y + 4y^2 + y^2 = 1$

$4 - 8y + 5y^2 = 1$

$5y^2 - 8y + 3 = 0$

(7) Solve these equations simultaneously

$$x + y = 3$$
$$x^2 - 2y^2 = 4$$