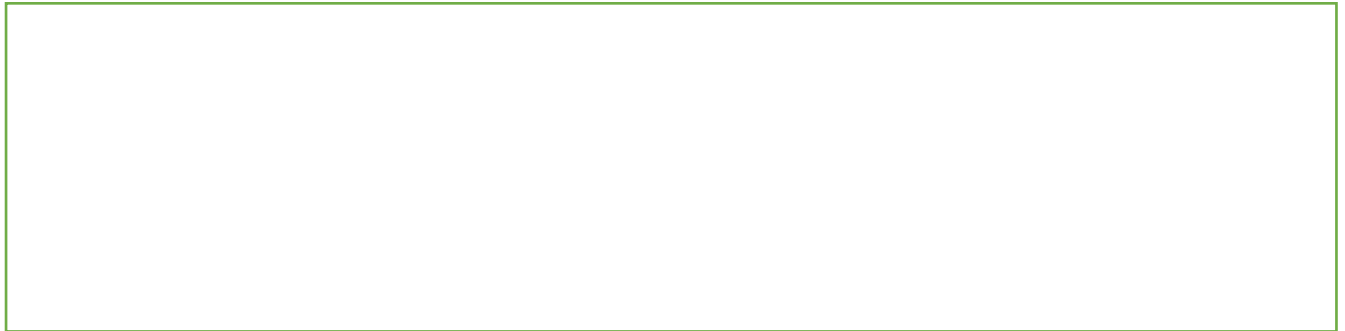


## Simultaneous Equations and Graphs



Examples:

1a. On the same axes, draw the graphs of  $2x + y = 3$  and

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

1b. Use your graph to write down the solutions to the simultaneous equations

1c. What algebraic method could we have used to show the graphs would have intersected twice?

## Example 2

a) On the same axes, draw the graphs of:

$$y = 2x - 2 \quad y = x^2 + 4x + 1$$

b) Prove algebraically that the lines never meet

Question: The line with equation  $y = 2x + 1$  meets the curve with equation  $kx^2 + 2y + (k - 2) = 0$  at exactly one point. Given that  $k$  is a positive constant:

a) Find the value of  $k$ .

b) For this value of  $k$ , find the coordinates of this point of intersection