a)
Solve

$$x^2 + y^2 = 34$$
$$y = x + 2$$

Substitute $y = x + 2$ into the first equation	$x^2 + (x+2)^2 = 34$
Expand the bracket and simplify the equation	<table><tr><td></td><td>x</td><td>+2</td></tr><tr><td>x</td><td>x^2</td><td>+2x</td></tr><tr><td>+2</td><td>-2x</td><td>+4</td></tr></table> $= x^2 + 2x + 2x + 4 = x^2 + 4x + 4$ $x^2 + x^2 + 4x + 4 = 34$ $2x^2 + 4x + 4 = 34$
Make the right-hand side 0 and solve the equation	$2x^2 + 4x - 30 = 0$ $x^2 + 2x - 15 = 0$ $(x+5)(x-3) = 0$ $x = -5$ and $x = 3$
Calculate the values of y	$y = x + 2$ $y = -3$ and $y = 5$
Write your solutions	$x = -5, y = -3$ and $x = 3, y = 5$

b)
Solve

$$x^2 + y^2 = 17$$
$$y = x - 3$$

Substitute $y = x - 3$ into the first equation	$x^2 + (x-3)^2 = 17$
Expand the bracket and simplify the equation	<table><tr><td></td><td>x</td><td>-3</td></tr><tr><td>x</td><td>x^2</td><td>-3x</td></tr><tr><td>-3</td><td>-3x</td><td>+9</td></tr></table> $= x^2 - 3x - 3x + 9 = x^2 - 6x + 9$ $x^2 + x^2 - 6x + 9 = 17$ $2x^2 - 6x + 9 = 17$
Make the right-hand side 0 and solve the equation	$2x^2 - 6x - 8 = 0$ $x^2 - 3x - 4 = 0$ $(x-4)(x+1) = 0$ $x = 4$ and $x = -1$
Calculate the values of y	
Write your solutions	

c)
Solve

$$x^2 + y^2 = 85$$
$$y = x + 1$$

Substitute $y = x + 1$ into the first equation	$x^2 + (x + 1)^2 = 85$
Expand the bracket and simplify the equation	
Make the right-hand side 0 and solve the equation	
Calculate the values of y	
Write your solutions	

d)
Solve

$$x^2 + y^2 = 37$$
$$y = x - 5$$