Q5)

a:) $P(3, 19)$

$\Rightarrow 9 - 3y + y^2 = 19$

$\Rightarrow y^2 - 3y - 10 = 0$

$\Rightarrow (y-5)(y+2) = 0$

$y = -5$ or 2

$\therefore$ since y is an integer the statement is true.

a:) $P(-1, 11)$

$1 + y + y^2 = 11$

$y^2 + y - 10 = 0$

$\rightarrow$ use quadratic equation:

$(-1 \pm \sqrt{1+40})/2 = y$

$\frac{-1-\sqrt{41}}{2}$ or $\frac{-1+\sqrt{41}}{2} = y$

$\therefore$ Since y is not a integer the statement is false.

b)

- n remains undefined in the statement, and depending on the value of n the statement can be true or false. To show this you simplify the expression:

$x^2 - xy + y^2 \Rightarrow (x - \frac{y}{2})^2 + \frac{3}{4}y^2$ and $(x - \frac{y}{2})^2 \geq 0$, $\frac{3}{4}y^2 \geq 0$

- from this we can infer that the expression is greater than or equal to 0. If n is < 0 then the statement is false and if $n > 0$ then the statement can be true.

$\therefore$ because the truth value depends on n and n is not defined, this must be a open statement.