1) Does the point $(41, 103)$ lie on the line represented by the vector equation
$\mathbf{r}(t) = \langle 1 + 2t, 3 + 5t \rangle$? justify your answer.

We want to know if there is a value of t such that r(t) = <41, 103>.

$$1 + 2t = 41$$
$$2t = 40$$
$$t = 20$$

$$3 + 5t = 103$$
$$5t = 100$$
$$t = 20$$

since t=20 for both parts, the answer is yes.