2) Find the value of x so that vector projection of $\mathbf{b} = \langle x, 7 \rangle$ onto $\mathbf{a} = \langle 1, 4 \rangle$ is $\langle 5, 20 \rangle$

$$\text{proj}_a b = \frac{a \cdot b}{|a|^2} a = \langle 5, 20 \rangle$$

$$\frac{x+28}{(\sqrt{1^2+4^2})^2} \langle 1, 4 \rangle = \langle 5, 20 \rangle$$

$$\frac{x+28}{17} \langle 1, 4 \rangle = \langle 5, 20 \rangle$$

$$\left\langle \frac{x+28}{17}, \frac{4(x+28)}{17} \right\rangle = \langle 5, 20 \rangle$$

$$\frac{x+28}{17} = 5$$

$$x + 28 = 85$$

$$x = 57$$