(d): $y = -3x - 8$ is tangent to (C) at E (given)

So, $a_{(d)} \times a_{(EI)} = -1$

$\left(-3\left(\frac{-1-b}{+1-a}\right) = \frac{-1}{1}\right)$

$-3 - 3b = +1 - a$

hence, $a - 3b = 4$.

and E belongs to (d)

So, $y_E = -3x_E - 8$

$b = -3a - 8$

hence, $3a + b = -8$

Thus, $\begin{cases} a - 3b = 4 \\ 3a + b = -8 \end{cases}$

c) $\begin{cases} a - 3b = 4 & \text{---} (1) \\ (3a + b = -8)(\times 3) & \text{---} (2) \end{cases}$

So, $\begin{cases} a - 3b = 4 \\ 9a + 3b = -24 \end{cases}$ add

$10a = -20$

$\boxed{a = -2}$

Sub. value of a in (2) to get:

$3(-2) + b = -8$

$\boxed{b = -2}$

6) a) $\overrightarrow{CB} + \overrightarrow{CD} = \overrightarrow{CH}$ (given)

$m = 1$, so $D(2, 4)$ (given)

So, quadrilateral CBHD is a parallelogram.

Then, $\overrightarrow{CB} = \overrightarrow{DH}$

So $x_{\overrightarrow{CB}} = x_{\overrightarrow{DH}}$ and $y_{\overrightarrow{CB}} = y_{\overrightarrow{DH}}$

$x_B - x_C = x_H - x_D$ $\quad$ $y_B - y_C = y_H - y_D$

$-6 = x_H - 2$. $\quad$ $2 = y_H - 4$.

$\boxed{x_H = -4}$ $\quad$ $y_H = 6$.

Thus, $H(-4, 6)$

but, $\triangle BCD$ is isosceles at C (proved)

So, $CB = CD$ (legs of an isosceles $\triangle$)

Thus, CBHD is a rhombus (parallelogram + pair of equal adj. sides).