b) $\mathcal{L}[\ddot{x} + 2\dot{x} + 5x = 10] = s^2x + 2sx + 5x = \frac{10}{s}$

$$x(s^2 + 2s + 5) = \frac{10}{s}$$

$$x = \frac{10/s}{s^2+2s+5} = \frac{2}{s} - \frac{2s + 4}{s^2 + 2s + 5}$$

$$\mathcal{L}^{-1}[X(s)] = 2 - e^{-t}\left(\left(\cos(2t) + \frac{\sin(2t)}{2}\right) \cdot 2\right.$$

c) $\mathcal{L}[\dddot{y} + 3\ddot{y} + 5\dot{y} + y] = s^3 \cdot Y(s) + s^2 \cdot 3Y(s) + s \cdot 5Y(s) + 1$

$$\mathcal{L}[\dddot{x} + 4\ddot{x} + 6\dot{x} + 8x] = s^3 \cdot X(s) + s^2 \cdot 4X(s) + s \cdot 6X(s) + 8$$

$$H(s) = \frac{Y(s)}{X(s)} = \frac{s^3Y(s) + s^2 3Y(s) + s5Y(s) + 1}{s^3X(s) + s^2 4X(s) + s6X(s) + 8}$$

$$= \underline{\underline{1 + \frac{1}{-s^2 - s - 7}}}$$