

$$x''''(t) - 5x'''(t) - 4x''(t) + 2x'(t) - x(t) + 8 = 0$$

$$x(t) \rightarrow X(p)$$

Then use differentiation theorem:

$$x'(t) \rightarrow pX(p) - 5$$

$$x''(t) \rightarrow p^2X(p) - 5p$$

$$x'''(t) \rightarrow p^3X(p) - 5p^2 + 1$$

$$x''''(t) \rightarrow p^4X(p) - 5p^3 + p - 2$$

By linearization:

$$x''''(t) - 5x'''(t) - 4x''(t) + 2x'(t) - x(t) + 8 \rightarrow$$

$$\rightarrow p^4X(p) - 5p^3 + p - 2 - 5(p^3X(p) - 5p^2 + 1) -$$

$$-4(p^2X(p) - 5p) + 2(pX(p) - 5) - X(p) + \frac{8}{p} =$$

$$= (p^4 - 5p^3 - 4p^2 + 2p - 1)X(p) - 5p^3 + 25p^2 + 21p - 17 + 8/p$$