

RESOLUCIÓN DE ECS. DIFERENCIALES

$$\ddot{x}(t) + 3\dot{x}(t) + 2x(t) = 5; \quad \dot{x}(0) = 2; \quad x(0) = -1$$

$$[s^2 X(s) - sx(0) - \dot{x}(0)] + 3[sX(s) - x(0)] + 2X(s) = \frac{5}{s}$$

$$[s^2 X(s) + s - 2] + 3[sX(s) + 1] + 2X(s) = \frac{5}{s}$$

$$(s^2 + 3s + 2)X(s) + (s + 1) = \frac{5}{s}$$

$$X(s) = \frac{-s^2 - s + 5}{s(s^2 + 3s + 2)} = \frac{-s^2 - s + 5}{s(s+1)(s+2)} = \frac{5/2}{s} - \frac{5}{s+1} + \frac{3/2}{s+2}$$

$$x(t) = \frac{5}{2} - 5e^{-t} + \frac{3}{2}e^{-2t}$$