

IV.6

- a) Collecting y 's on LHS and F 's on RHS and dividing by m gives

$$\ddot{y} + \frac{b}{m} \dot{y} + \frac{k}{m} y = \frac{1}{m} F$$

Taking the Laplace transform gives

$$\left[s^2 + \frac{b}{m} s + \frac{k}{m} \right] Y(s) = \frac{1}{m} F(s)$$

- b) Solving for $Y(s)$ gives

$$Y(s) = \left(\frac{\frac{1}{m}}{s^2 + \frac{b}{m} s + \frac{k}{m}} \right) F(s)$$

- c) The block diagram is

