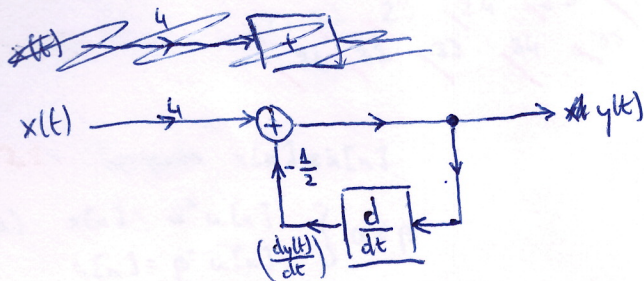
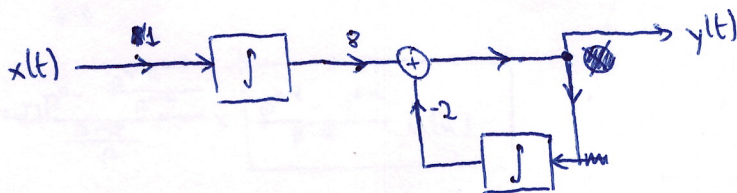


2.39. Draw block diagrams for causal LTI systems described by:

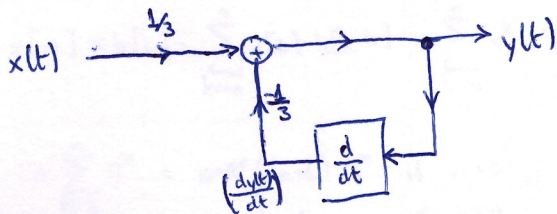
a) $y(t) = -\frac{1}{2} \frac{dy(t)}{dt} + 4x(t)$



$$\frac{dy(t)}{dt} = -2y(t) + 8x(t) \Rightarrow y(t) = -\int 2y(t) dt + \int 8x(t) dt$$



b) $\frac{dy(t)}{dt} + 3y(t) = x(t) \Rightarrow y(t) = \frac{1}{3}x(t) - \frac{1}{3} \frac{dy(t)}{dt}$



$$\frac{dy(t)}{dt} + 3y(t) = x(t) \Rightarrow y(t) = \int x(t) dt - 3 \int y(t) dt$$

~~Block diagram for the system $y(t) = \frac{1}{3}x(t) - \frac{1}{3} \frac{dy(t)}{dt}$ using integrators.~~

