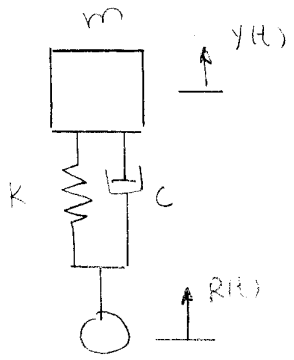
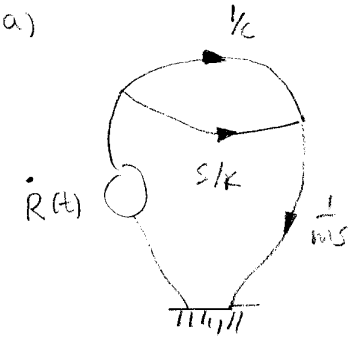


(a)



$$\frac{1}{Z_1(s)} = \frac{1}{1/C} + \frac{1}{S/K} \quad \Rightarrow \quad Z_1(s) = \frac{1}{C + K/S} = \frac{S}{CS+K}$$

$$Z_R(s) = Z_1(s) + \frac{1}{MS} = \frac{S}{CS+K} + \frac{1}{MS} = \frac{MS^2+CS+K}{MS(CS+K)}$$

(b) The transfer function is

$$H_Y(s) = \frac{CS+K}{MS^2+CS+K}$$

The poles satisfy $MS^2+CS+K=0$. Hence we need to find the zeros of $Z_R(s)$.