

**Problem 9** (signal flow graph)

The signal flow graph in figure 1 describes the input-output relationship of  $v(k)$  and  $y(k)$ .

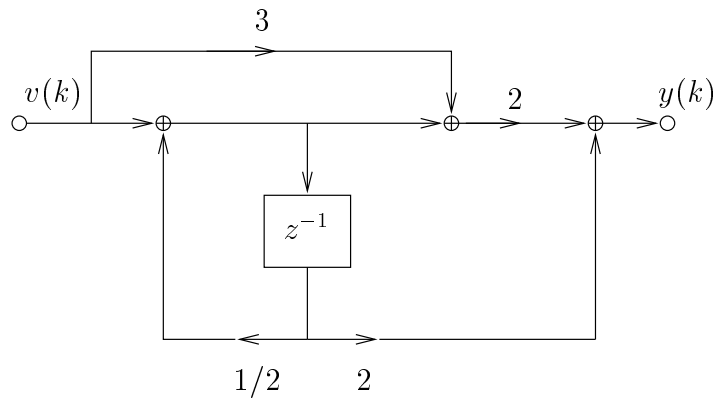


Figure 1: Signal flow graph of a filter

Determine the differential equation, the transfer function  $H(z) = \frac{Y(z)}{V(z)}$  and the impulse response  $h(k)$  of the system.

**Problem 10** (signal flow graph)

Show that the systems in figure 2 are equivalent.

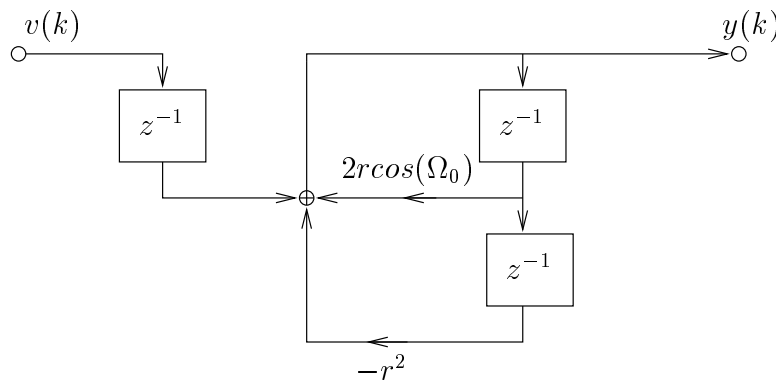
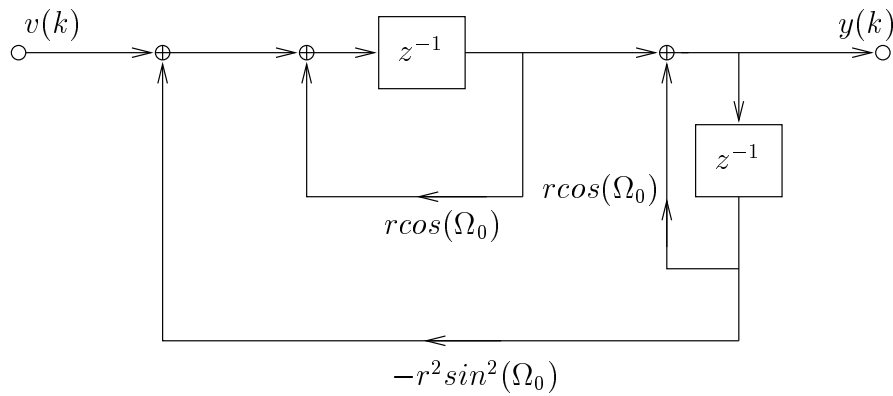


Figure 2: Signal flow graph of two systems