EE341.01 **PS11** **DUE F 12/05/97**

For each set of differential equations given

a) find the block diagram representing the system of equations and

b) reduce the block diagram to one block containing the transfer function Y(s)/X(s) ensuring your answer is a rational fraction with a common denominator.

1. $\ddot{y} + 2\dot{y} + 4y = 6\dot{x} + 2x$

2. $$\dot{v} + 2v = 4x$$
$$\dot{y} + 3y = 2v$$

3. $$\dot{v} + 2v = 2x$$
$$\dot{p} + 6p = 2\dot{v} + v$$
$$\dot{y} = 2p$$

4. $$\dot{r} + 2r = 3x$$
$$\dot{p} + 3p = r$$
$$\dot{q} + 6q = 2r$$
$$\dot{y} + 4y = 6q - 3p$$

5. $$\dot{z} = 3v$$
$$\dot{p} + 2p = z$$
$$\ddot{q} + 4\dot{q} + 3q = 2\dot{z}$$
$$\dot{y} + 3y = \dot{p} + q$$
$$v = x - y$$