6. Signal flow graphs

Example 6.4.4 (p. 131)

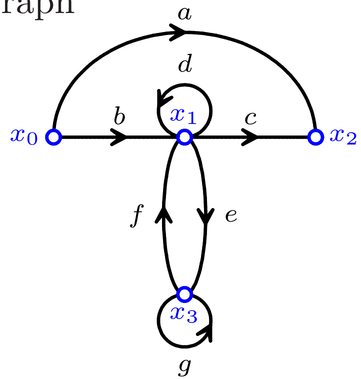
Solve the system of linear equations

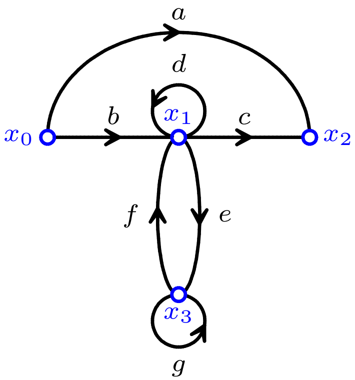
$$\begin{array}{ccccccc} x_1 & = & bx_0 & + & dx_1 & + & fx_3 \\ x_2 & = & ax_0 & + & cx_1 & & \\ x_3 & = & & & ex_1 & + & gx_3 \end{array}$$

The system of linear equations

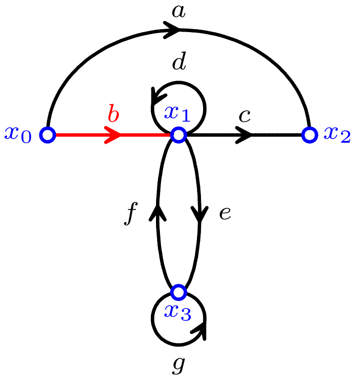
$$
\begin{aligned}
x_1 &= bx_0 + dx_1 + fx_3 \\
x_2 &= ax_0 + cx_1 \\
x_3 &= ex_1 + gx_3
\end{aligned}
$$

signal flow digraph

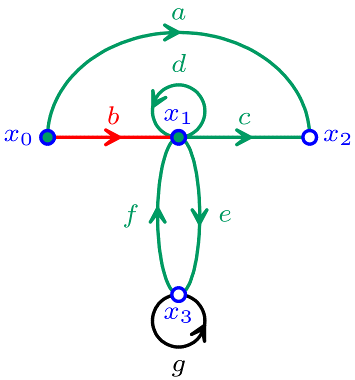




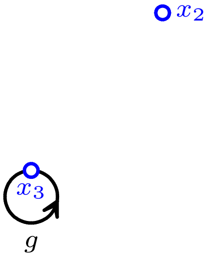
$$\frac{x_1}{x_0} = \frac{b \cdot (1-g)}{1-(d+ef+g)+gd}$$



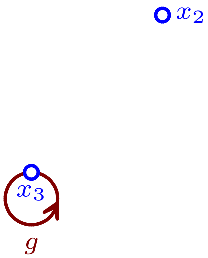
$$\frac{x_1}{x_0} = \frac{b \cdot (1-g)}{1-(d+ef+g)+gd}$$



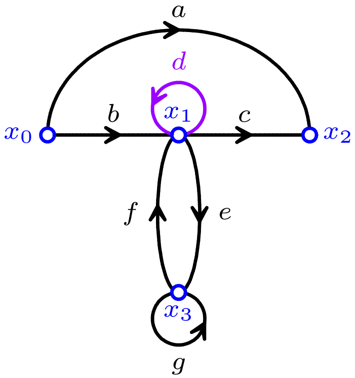
$$\frac{x_1}{x_0} = \frac{b \cdot (1-g)}{1-(d+ef+g)+gd}$$



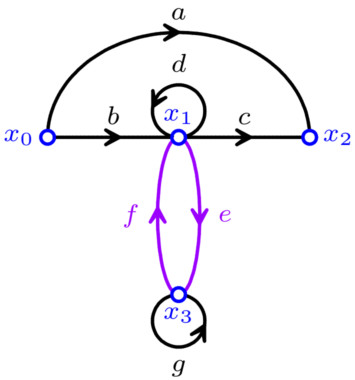
$$\frac{x_1}{x_0} = \frac{b \cdot (1-g)}{1-(d+ef+g)+gd}$$



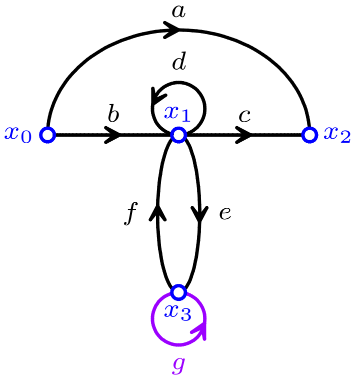
$$\frac{x_1}{x_0} = \frac{b \cdot (1 - g)}{1 - (d + ef + g) + gd}$$



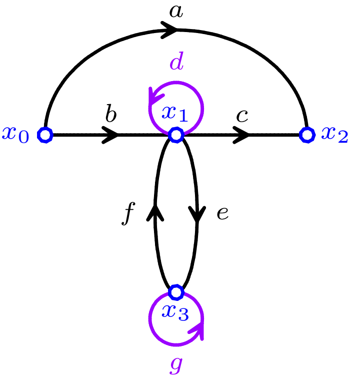
$$\frac{x_1}{x_0} = \frac{b \cdot (1-g)}{1-(d+ef+g)+gd}$$



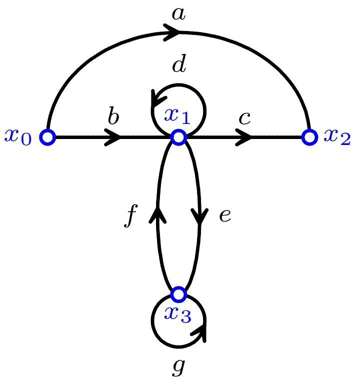
$$\frac{x_1}{x_0} = \frac{b \cdot (1-g)}{1-(d+ef+g)+gd}$$



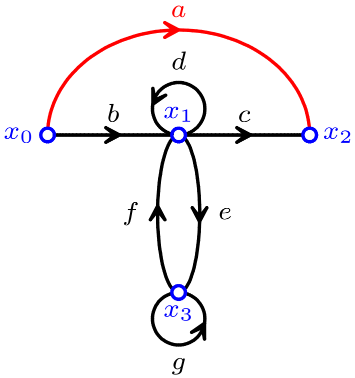
$$\frac{x_1}{x_0} = \frac{b \cdot (1 - g)}{1 - (d + ef + g) + gd}$$



$$\frac{x_1}{x_0} = \frac{b \cdot (1-g)}{1-(d+ef+g)+gd}$$



$$\frac{x_2}{x_0} = \frac{a \cdot \big(1 - (d + ef + g) + gd\big) + bc \cdot (1 - g)}{1 - (d + ef + g) + gd}$$



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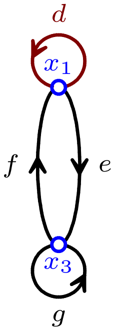
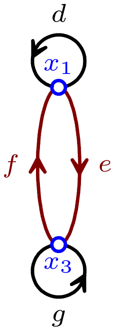
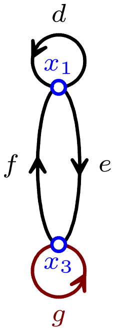


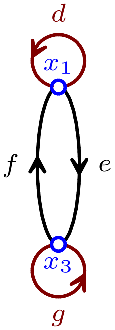
$$\frac{x_2}{x_0} = \frac{a \cdot \big(1 - (d + ef + g) + gd\big) + bc \cdot (1 - g)}{1 - (d + ef + g) + gd}$$



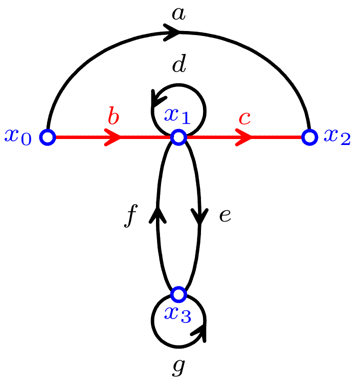
$$\frac{x_2}{x_0} = \frac{a \cdot \big(1 - (d + ef + g) + gd\big) + bc \cdot (1 - g)}{1 - (d + ef + g) + gd}$$



$$\frac{x_2}{x_0} = \frac{a \cdot \big(1 - (d + ef + g) + gd\big) + bc \cdot (1 - g)}{1 - (d + ef + g) + gd}$$

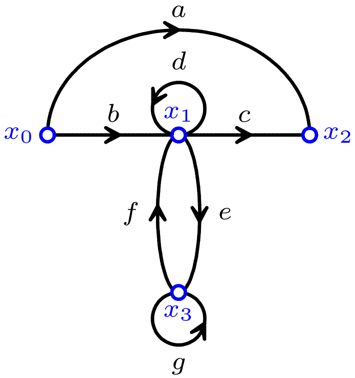


$$\frac{x_2}{x_0} = \frac{a \cdot \big(1 - (d + ef + g) + gd\big) + bc \cdot (1 - g)}{1 - (d + ef + g) + gd}$$

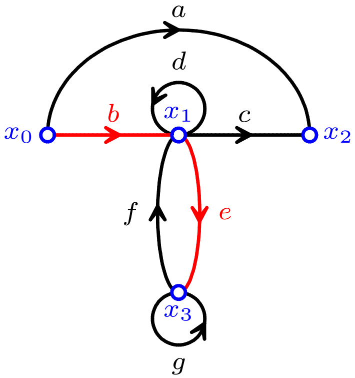


$$\frac{x_2}{x_0} = \frac{a \cdot \big(1 - (d + ef + g) + gd\big) + bc \cdot (1 - g)}{1 - (d + ef + g) + gd}$$

$$\frac{x_2}{x_0} = \frac{a \cdot \big(1 - (d + ef + g) + gd\big) + bc \cdot (1 - g)}{1 - (d + ef + g) + gd}$$



$$\frac{x_3}{x_0} = \frac{be \cdot 1}{1 - (d + ef + g) + gd}$$



$$\frac{x_3}{x_0} = \frac{be \cdot 1}{1 - (d + ef + g) + gd}$$

$$\frac{x_3}{x_0} = \frac{be \cdot 1}{1 - (d + ef + g) + gd}$$