Figure 5.2
Components of a block diagram for a linear, time-invariant system
Figure 5.3
a. Cascaded subsystems;
b. equivalent transfer function

(a) 
\[ X_2(s) = G_1(s)R(s) \]
\[ X_1(s) = G_2(s)G_1(s)R(s) \]
\[ C(s) = G_3(s)G_2(s)G_1(s)R(s) \]

(b) 
\[ C(s) = G_3(s)G_2(s)G_1(s) \]
Figure 5.5

(a) Parallel subsystems;

(b) equivalent transfer function
Figure 5.6

a. Feedback control system;
b. simplified model;
c. equivalent transfer function
Figure 5.7
Block diagram algebra for summing junctions—equivalent forms for moving a block
a. to the left past a summing junction; b. to the right past a summing junction
Figure 5.8
Block diagram algebra for pickoff points—equivalent forms for moving a block

a. to the left past a pickoff point;

b. to the right past a pickoff point
Figure 5.9
Block diagram for Example 5.1
Figure 5.10
Steps in solving Example 5.1:

a. collapse summing junctions;

b. form equivalent cascaded system in the forward path and equivalent parallel system in the feedback path;

c. form equivalent feedback system and multiply by cascaded $G_1(s)$
Figure 5.11
Block diagram for Example 5.2
Figure 5.12
Steps in the block diagram reduction for Example 5.2