Block diagram reduction technique

CONTINUE>>>

Figure 2 Second-order feedback control system

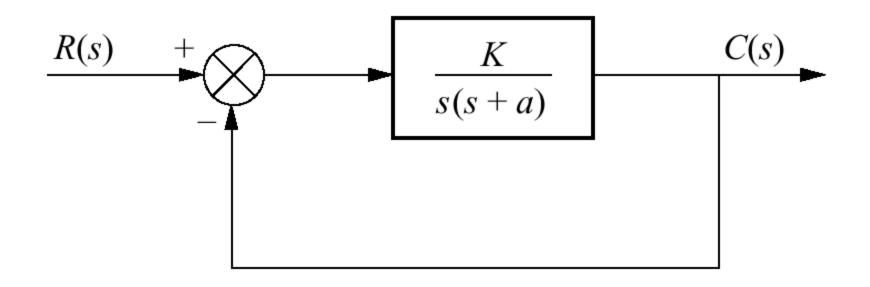


Figure Feedback system

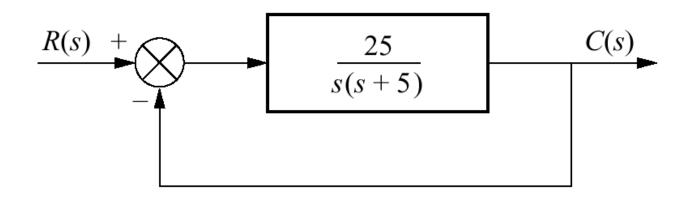


Figure Feedback system

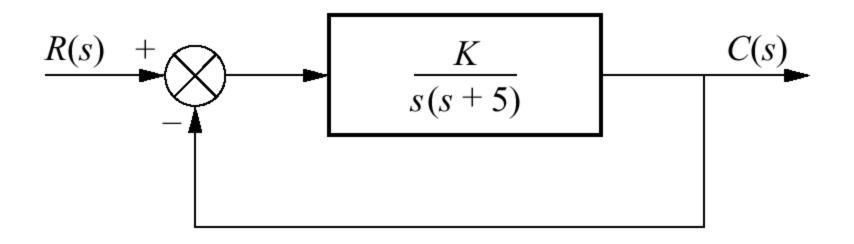
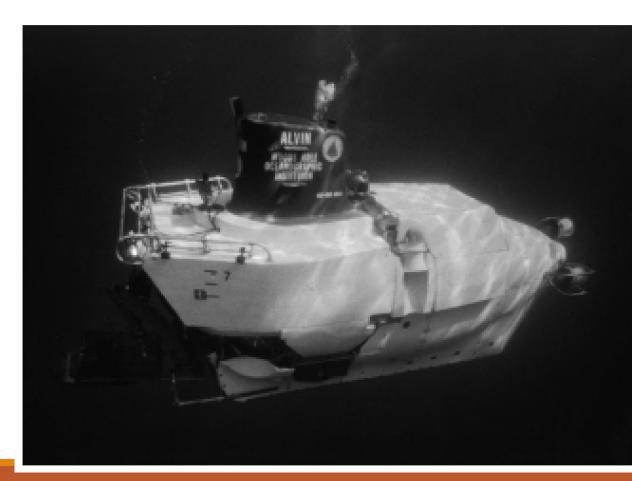


Figure 5.34

Alvin, a manned submersible, explored the wreckage of the*Titanic* with a tethered robot, Jason Junior.



Motor, load Input Power potentiometer Preamplifier amplifier and gears $V_p(s)$ $E_a(s)$ $\theta_i(s)$ $\theta_o(s)$ 0.2083 100 Κ $\overline{\pi}$ $\overline{s(s+1.71)}$ s + 100 $\overline{\pi}$ **Block diagram** reduction for the Output potentiometer antenna azimuth *(a)* position control Preamplifier Power Motor, load and potentiometers amplifier and gears system: $V_p(s)$ $\theta_o(s)$ $\theta_i(s)$ + $E_a(s)$ 100 0.2083 K a. original; $\overline{\pi}$ s + 100s(s + 1.71)**b.** pushing input potentiometer to *(b)* the right past the summing junction; $\theta_o(s)$ $\theta_i(s)$ 6.63 K c. showing equivalent s(s+1.71)(s+100)forward transfer (c)function; d. final closed-loop $\theta_i(s)$ $\theta_o(s)$ 6.63 K $\overline{s^3 + 101.71s^2 + 171s + 6.63} K$ transfer function (*d*)

