Figure 2.1
First-order system response for $a > 0$ and $a < 0$ from the same initial condition.
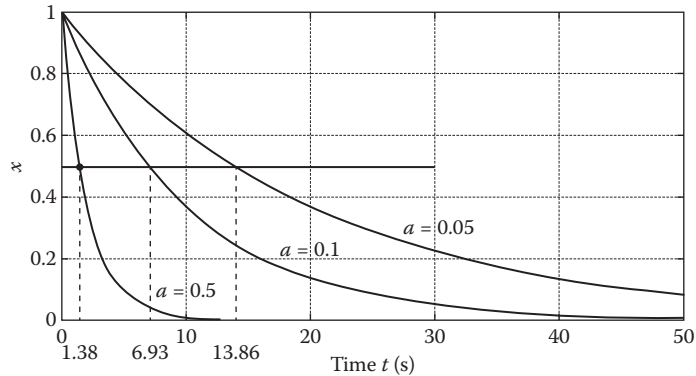
Figure 2.2
First-order system response for different positive values of '*a*' starting from same initial condition.
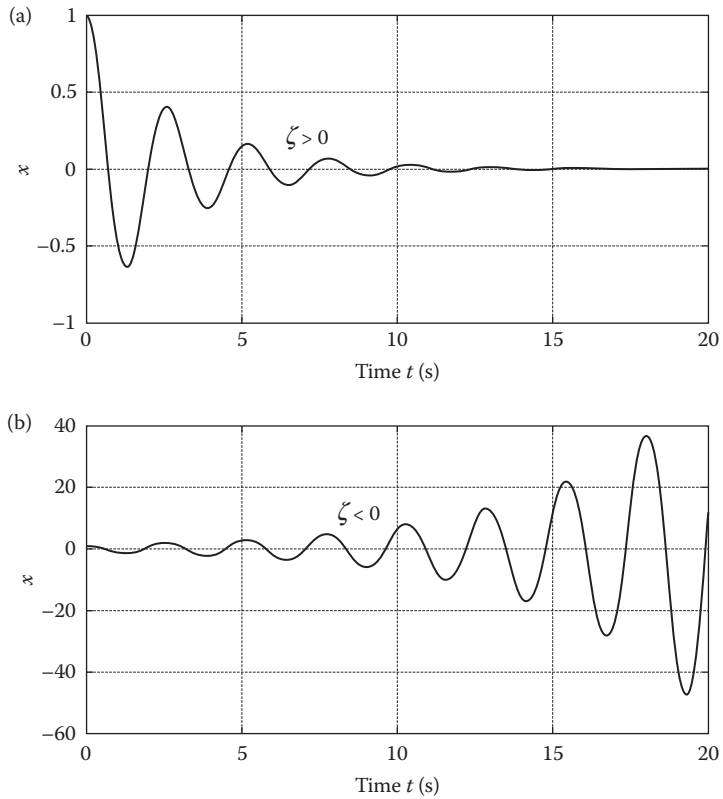
002x002.eps

Figure 2.3
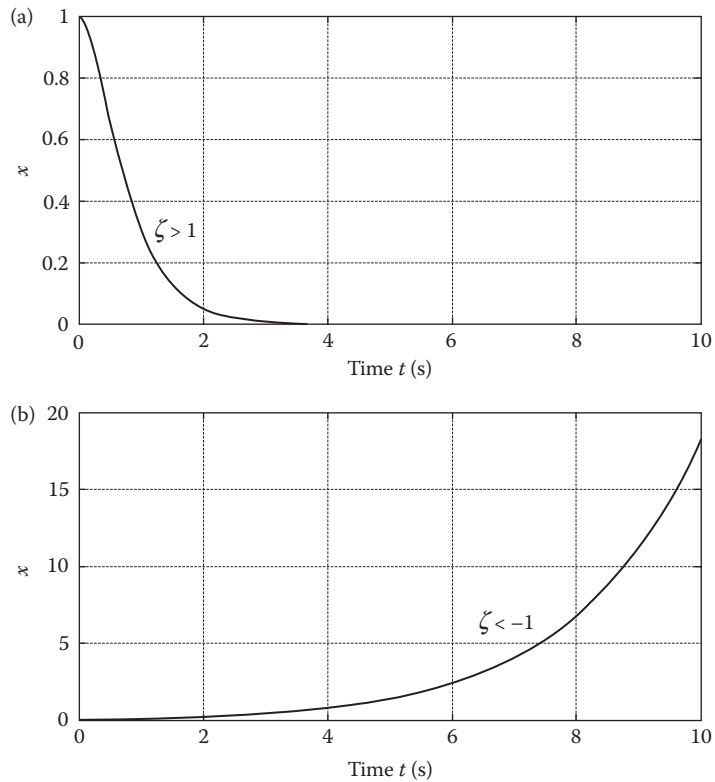Second-order system response: (a) stable and (b) unstable.

Figure 2.4
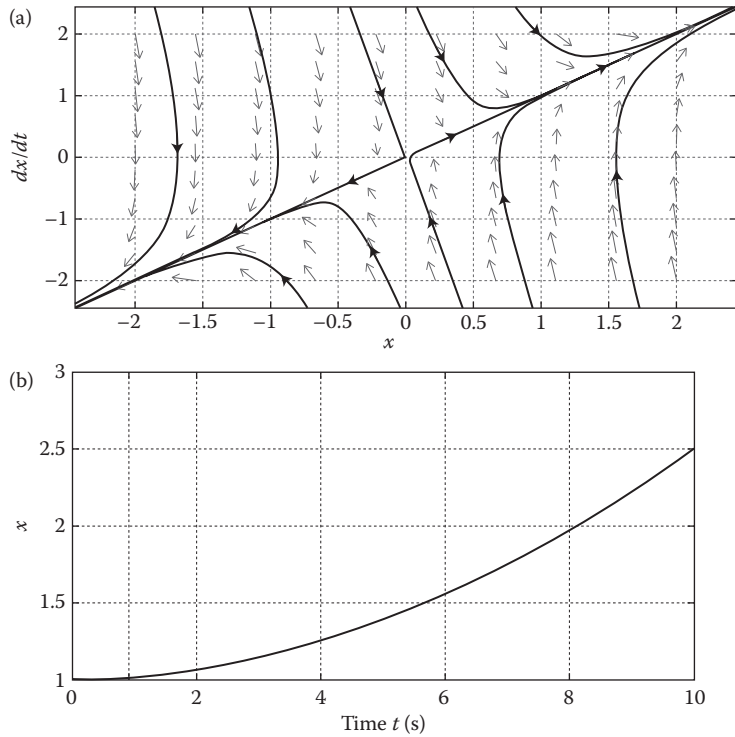Second-order response for (a) $\zeta > 1$ and (b) $\zeta < -1$.

002x004.eps
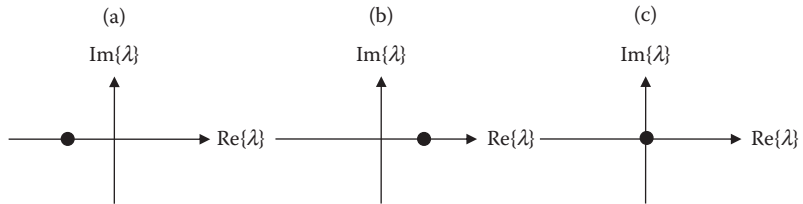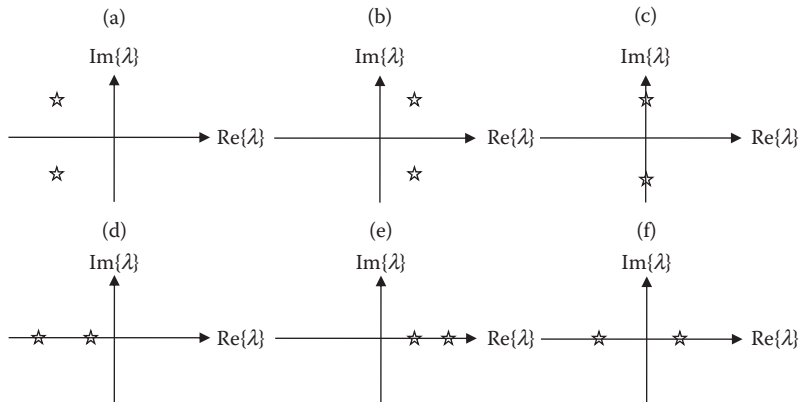
Figure 2.5
(a) Plot showing the evolution of $x(t)$ and $\dot{x}(t)$ (on the y axis in the figure) with time and (b) time response for $k < 0$.

002x005.eps

First-order system: Possible locations of eigenvalue

Second-order system: Possible locations of eigenvalues

Figure 2.6
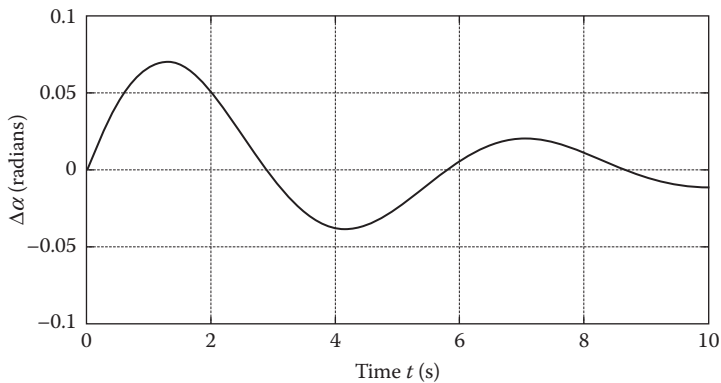Locations of eigenvalues for first- and second-order systems.

002x006.eps

Figure 2.7
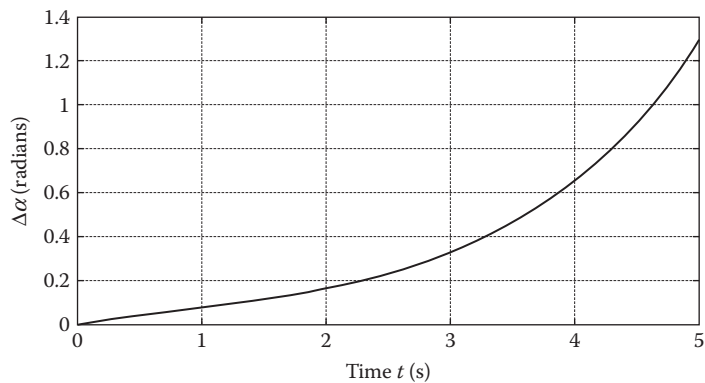Short-period time response for Example 2.6.

002x007.eps

Figure 2.8
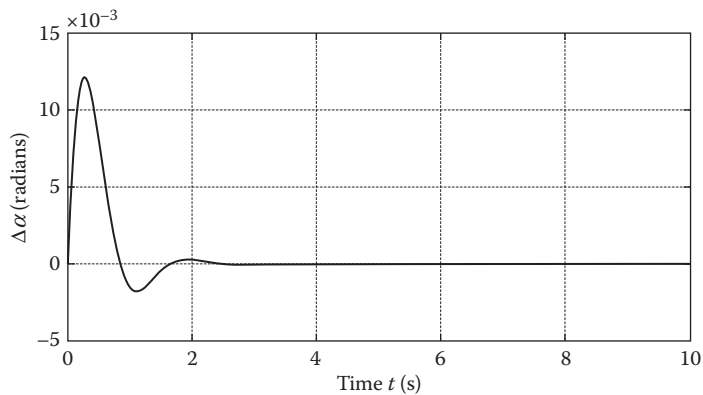Exponential short-period time response for Example 2.7.

Figure 2.9
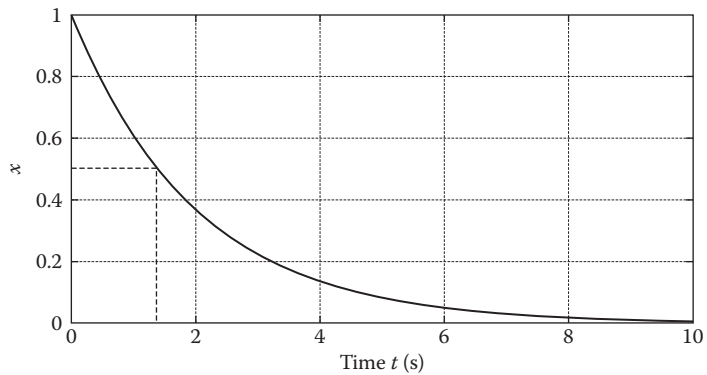Short-period response of Cessna 182 (Example 2.8).

Figure 2.10
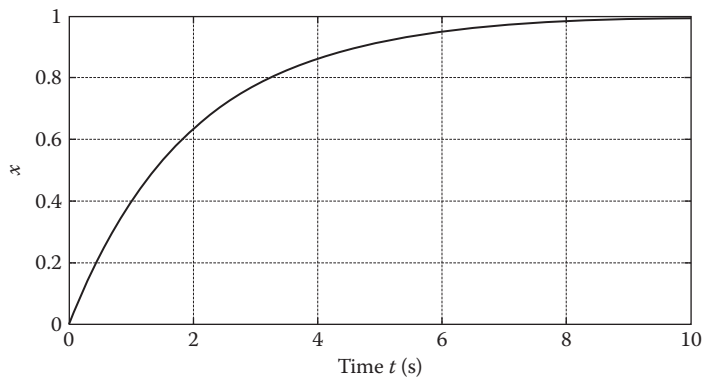Impulse response of a first-order system.

Figure 2.11
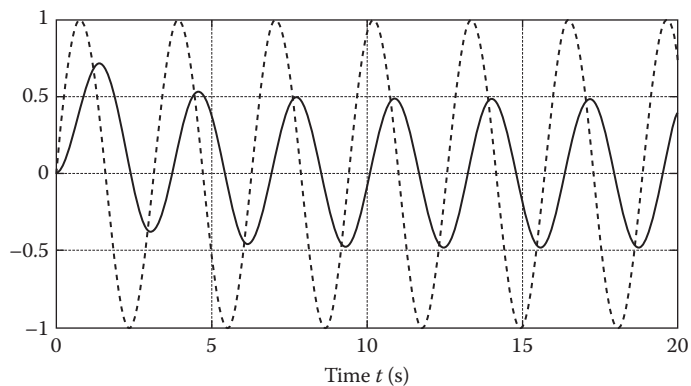Step response of a first-order system.

Figure 2.12
Time response of a first-order system to harmonic input. Dashed line: Input $u = \sin(2t)$, solid line: Output x.
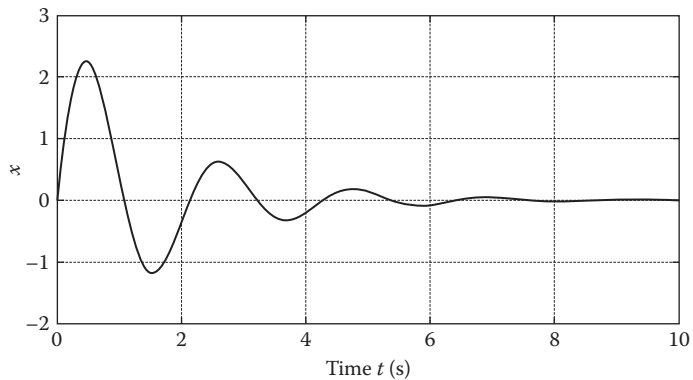
002x012.eps

Figure 2.13
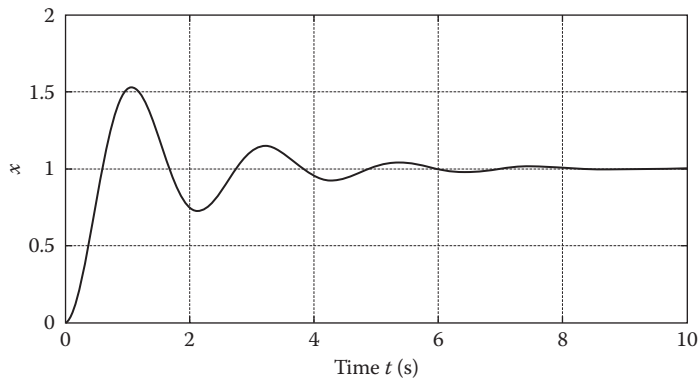Impulse response of a second-order system.

Figure 2.14
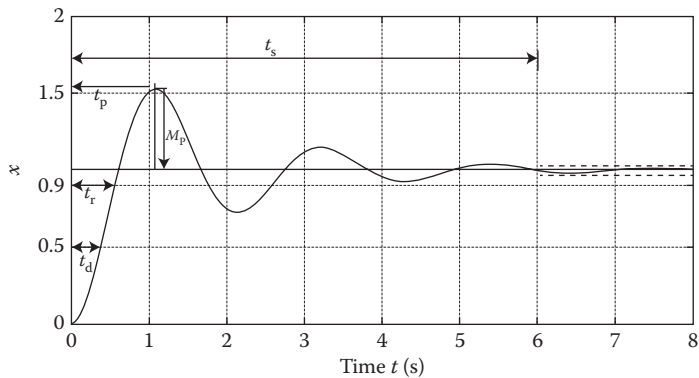Response of a second-order system to unit step input.

Figure 2.15
A typical second-order system response to unit-step input with characteristic parameters.
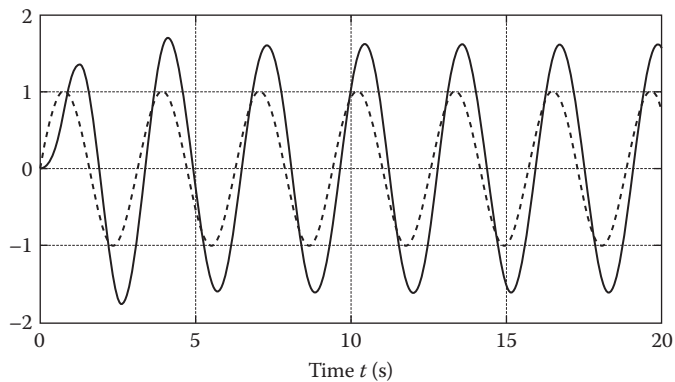
Figure 2.16
Time response of a second-order system to harmonic input. Dashed line: Input $u = \sin(2t)$, solid line: Output x.
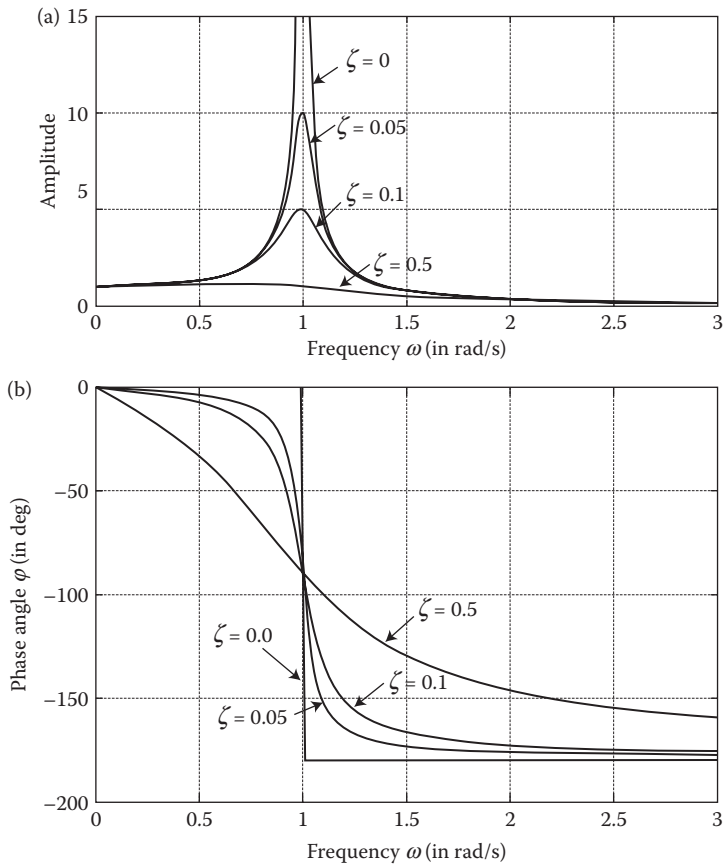
002x016.eps

Figure 2.17
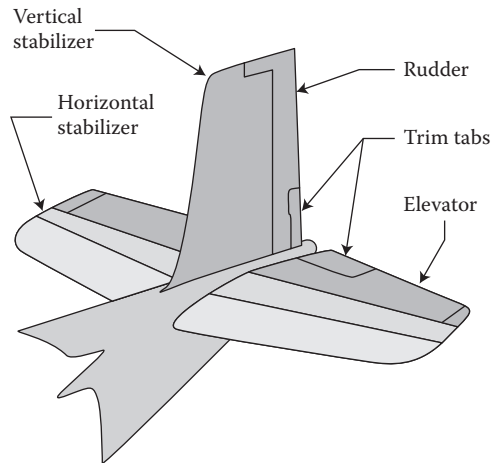(a) Magnitude and (b) phase angle versus frequency plots showing a second-order system response.

Figure 2.18
Elevator at the trailing edge of the horizontal tail. (www.americanflyers.net) (http://www.americanflyers.net/aviationlibrary/pilots_handbook/images/chapter_1_img_32.jpg)

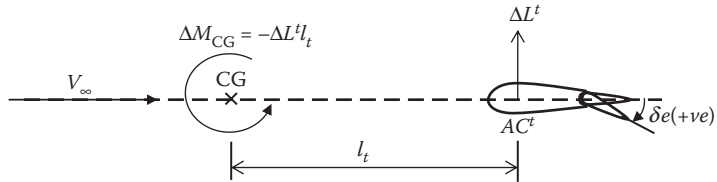002x018.eps

$$\Delta M_{CG} = -\Delta L^t l_t$$

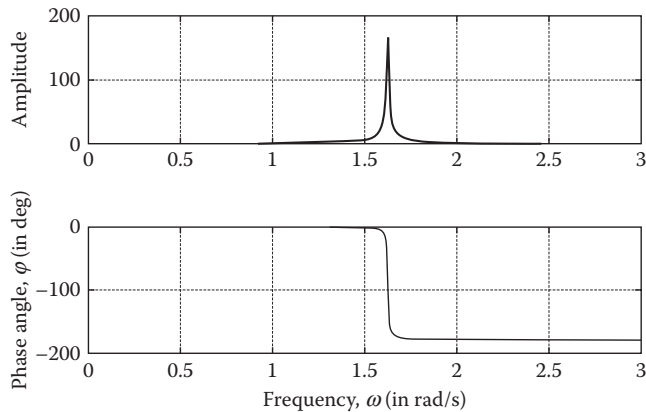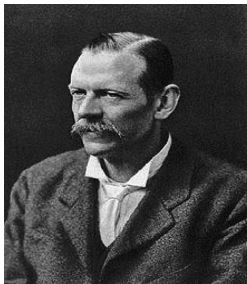Figure 2.19
Action of elevator producing pitching moment.

Figure 2.20
Magnitude and phase plots versus frequency showing pitch response to elevator deflection.

George Hartley Bryan
(1864–1928) (source: http://en.
wikipedia.org/wiki/
GeorgeH.Brtab)

ITX002x006.tif