ECE 460 Q3 02/02/00

A second order system is operating with damping ratio 0.80 and peak time of 2 seconds. the system has steady-state value of 80.

(a) Write the Transfer Function.
(b) Draw the step Response.

$$\zeta = 0.8 \quad T_p = 2$$

$$T_p = \pi / \omega_n \sqrt{1-\zeta^2}, \quad OS = e^{-3\pi/\sqrt{1-\zeta^2}} \cdot 100$$

$$\Rightarrow \omega_n = 2.618$$
$$OS = 1.516\%$$

$$T_s = 1.91 \text{ s}$$

$$G(s) = \frac{80\ (6.854)}{s^2 + 4.19s + 6.854}$$