ECE 321 - Homework #31

Differential Equations with Periodic Inputs

x(t) and y(t) are related by the following transfer function:

$$Y = \left(\frac{20}{(s+1)(s+5)} \right) X$$

Find y(t) for the following inputs: (hint: use your solutions from homework #30 for x(t)).

1) $x(t) = x(t + 2\pi)$

$$x(t) = \begin{cases} t(\pi - t) & 0 < t < \pi \\ 0 & otherwise \end{cases}$$

2) $x(t) = x(t + \pi)$

$$x(t) = \begin{cases} 1 & 0 < t < 1 \\ 0 & otherwise \end{cases}$$

3) $x(t) = x(t + \pi)$

$$x(t) = \begin{cases} t & 0 < t < 1 \\ 0 & otherwise \end{cases}$$