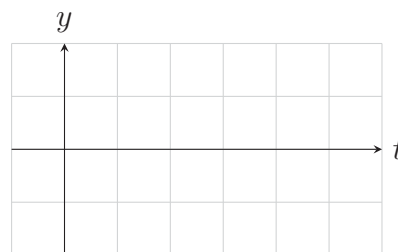


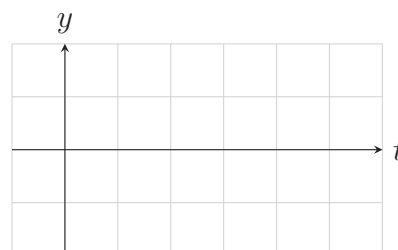
Math 256 GWS 16 - 7.5 Periodic and Piecewise Continuous Input Functions

Name: _____

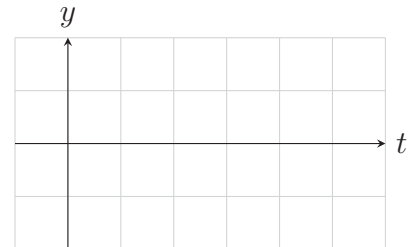
1. Given $F(s) = \frac{e^{-\pi s}}{s^2+1}$, find $f(t)$ and sketch the graph of f .



2. Given $F(s) = \frac{se^{-s}}{s^2+\pi^2}$, find $f(t)$ and sketch the graph of f .



3. Given $F(s) = \frac{s(1+e^{-3s})}{s^2+\pi^2}$, find $f(t)$ and sketch the graph of f .



4. Consider a mass-spring-dashpot system with $m = 1$, $c = 0$, and $k = 1$ in appropriate units. Suppose that the system is acted upon by a force

$$f(t) = \begin{cases} t & \text{if } 0 \leq t < 1 \\ 0 & \text{if } t \geq 1 \end{cases}$$

and that $x(0) = x'(0) = 0$.

Solve the initial-value problem $mx'' + cx' + kx = f(t)$ and graph the position function $x(t)$.

