Roll# Student 1:                                        Roll# Evaluator 1:

Roll# Student 2:                                        Roll# Evaluator 2:

## Problem 1

Evaluate and sketch the graph of the convolution product $f(t) * g(t)$ in each of the following cases.

(a) $f(t) = \begin{cases} 0 & t \le 0 \\ 2 & 0 < t < 1 \\ 0 & t \ge 1 \end{cases}$,    $g(t) = \begin{cases} 0 & t \le -1 \\ 1 & -1 < t < 1 \\ 0 & t \ge 1 \end{cases}$

(b) $f(t) = \begin{cases} 0 & t \le -1 \\ 1 & -1 < t < 1 \\ 0 & t \ge 1 \end{cases}$,    $g(t) = e^t u(-t)$

(c) $f(t) = \begin{cases} 0 & t \le 0 \\ 2 & 0 < t < 1 \\ 0 & t \ge 1 \end{cases}$,    $g(t) = \begin{cases} 0 & t \le -1 \\ 1 & -1 < t \le 0 \\ -1 & 0 < t < 1 \\ 0 & t \ge 1 \end{cases}$

(d) $f(t) = \delta(t - 2)$,      $g(t) = \begin{cases} 0 & t \le -1 \\ 1 & -1 < t \le 0 \\ -1 & 0 < t < 1 \\ 0 & t \ge 1 \end{cases}$

(e) $f(t) = \delta(t + 2) + 2\delta(t) + \delta(t - 2)$,      $g(t) = \begin{cases} 0 & t \le -1 \\ 1 & -1 < t \le 0 \\ -1 & 0 < t < 1 \\ 0 & t \ge 1 \end{cases}$