	MT240: Complex Variables and Transforms		<u></u>	
	Worksheet 1	Worksheet 13	$\prod_{m \in \mathcal{M}} \bigcup_{m \in \mathcal{M}}$	
	Fri, May 3		Spring 2019	
Roll	# Student 1:	Roll $\#$ Evaluator 1:	$\operatorname{Roll}\#$ Evaluator 1:	
Roll	# Student 2:	Roll# Evaluator 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.

$$\begin{aligned} \text{(a)} \ f(t) &= \begin{cases} 0 \quad t \le 0 \\ 2 \quad 0 < t < 1 \ , \\ 0 \quad t \ge 1 \end{cases} \qquad g(t) = \begin{cases} 0 \quad t \le -1 \\ 1 \quad -1 < t < 1 \\ 0 \quad t \ge 1 \end{cases} \\ \end{aligned}$$
$$\begin{aligned} \text{(b)} \ f(t) &= \begin{cases} 0 \quad t \le -1 \\ 1 \quad -1 < t < 1 \ , \\ 0 \quad t \ge 1 \end{cases} \qquad g(t) = e^t u(-t) \\ 0 \quad t \ge 1 \end{cases} \\ \end{aligned}$$
$$\begin{aligned} \text{(c)} \ f(t) &= \begin{cases} 0 \quad t \le 0 \\ 2 \quad 0 < t < 1 \ , \\ 0 \quad t \ge 1 \end{cases} \qquad g(t) = \begin{cases} 0 \quad t \le -1 \\ 1 \quad -1 < t \le 0 \\ -1 \quad 0 < t < 1 \\ 0 \quad t \ge 1 \end{cases} \\ \end{aligned}$$
$$\begin{aligned} \text{(d)} \ f(t) &= \delta(t-2), \qquad g(t) = \begin{cases} 0 \quad t \le -1 \\ 1 \quad -1 < t \le 0 \\ -1 \quad 0 < t < 1 \\ 0 \quad t \ge 1 \end{cases} \\ \end{aligned}$$
$$\begin{aligned} \text{(e)} \ f(t) &= \delta(t+2) + 2\delta(t) + \delta(t-2), \qquad g(t) = \begin{cases} 0 \quad t \le -1 \\ 1 \quad -1 < t \le 0 \\ -1 \quad 0 < t < 1 \\ 0 \quad t \ge 1 \end{cases} \\ \end{aligned}$$