2E2 Tutorial Sheet 5 First Term¹

9 November 2003

- 1. (2) Find the convolution (f * g)(t) when f(t) = t, $g(t) = e^{2t}$ $(t \ge 0)$.
- 2. (2) Use the convolution theorem to find the function f(t) with

$$\mathcal{L}(f) = \frac{1}{s^2(s-4)}.\tag{1}$$

3. (4) Use the formula for the Laplace transform of a periodic function with period c:

$$\mathcal{L}(f) = \frac{1}{1 - e^{-cs}} \int_0^c f(t) e^{-st} dt$$
(2)

to find the Laplace transform of a half-rectified wave



This is the form a AC current has after going through a diode.

¹Conor Houghton, houghton@maths.tcd.ie, see also http://www.maths.tcd.ie/~houghton/2E2.html