

MATH 2120 – Quiz 5 Thursday November 13, 2014

1. Solve for $x(t)$ and $y(t)$ in the following system of equations using Laplace transforms. Note the different initial conditions from the question in the homework.

$$\begin{aligned}x' &= 2x + y; & x(0) &= 6, \\y' &= 6x + 3y; & y(0) &= -2.\end{aligned}$$

2. Consider the Volterra integral equation

$$\phi(t) + \int_0^t (t - \xi) \phi(\xi) d\xi = \sin(2t). \tag{1}$$

Solve (1) by using the Laplace transform.