MA 16020 - Quiz 3 - Spring 2015

Directions: Please show all the work leading to your answers. Having some correct work with an incorrect answer will earn you partial credit.

1. (6 points) A 100 kg mass of salt is dissolving in water at a rate of

\[ 10(2x^2 + 3)e^{-6x} \text{ kg/hr} \]

How many kilograms of salt have dissolved after 5 hours? Round your answer to 3 decimal places.

2. (a) (2 points) True or False: The integral \( \int \frac{t^3}{\sqrt{t^2 + 3}} \, dt \) can be computed using integration by substitution.

(b) (2 points) What should you use for “u” and “dv” in order to solve the following integral:

\[ \int (5x^8 + 3x^3 - 2x + 7) \cos(4x) \, dx \]

(Don’t solve the integral, just write “\( u = \_\_\_\_\_\_\_ \)” and “\( dv = \_\_\_\_\_\_\_ \)”