Prof. Frithjof Lutscher, University of Ottawa, MAT 1332, Winter 2009
Assignment 1, due January 21, 8:30am in class

Student Name _____ Student Number _____

DGD 1 (FTX 227) DGD 2 (CBY B012) DGD 3 (TBT 070) DGD 4 (MCD 121)

By signing below, you declare that this work was your own and that you have not copied from any other individual or other source.

Signature _____

Each question is worth 2 points. No part marks will be given.

1. Calculate
$$\int_{-2}^{2}(y^4+5y^3)dy\,.$$

2. Calculate
$$\int_{-\pi/2}^{\pi/2}[x^2-20\sin(x)]dx\,.$$
Leave your answer in exact form (not a decimal approximation).

3. Calculate
$$\int_{2}^{5}\cos(2\pi(x-2))dx\,.$$

4. Calculate
$$\int_{0}^{\pi/2}x\cos(2x)dx\,.$$

5. Calculate
$$\int\frac{1}{1+4t}dt\,.$$

6. The amount a fish grows follows the differential equation
$$\frac{dL}{dt}=6.48e^{-0.09t}\,,$$
with initial condition $L(0)=5$, where t is measured in years and L is measured in centimetres. How much does the fish grow between ages $t=0.5$ and $t=1.5$? (Give your answer to two decimal places.)

7. The amount of chemical produced follows
$$\frac{dP}{dt}=5e^{-2t}\,,$$
with initial condition $P(0)=2$, where t is the time in minutes and P is measured in moles. How much chemical is produced between times $t=5$ and $t=10$? (Give your answer to four decimal places.)