University of Lethbridge
Department of Mathematics and Computer Science
MATH 1565 - Tutorial #11

Print your name and student number clearly in the space above.

Complete the problems on the back of this page to the best of your ability. If there is a problem you especially desire feedback on, please indicate this.

It is recommended that you work out the details on scrap paper before writing your solutions on this page.

1. Calculate the following Taylor polynomials:

[4] (a) For $f(x) = e^{x^2}$, degree 4, about $x = 0$.

[2] (b) For $g(u) = e^u$, degree 2, about $u = 0$.

(What happens if you put $u = x^2$ in your answer for part (b)?)

2. Calculate the following antiderivatives:

[3] (a) The antiderivative F of $f(x) = \dfrac{1}{1+x^2}$ such that $F(1) = \pi$.

[3] (b) $\displaystyle\int (x^3 - 3\sqrt{x} + 4)\, dx$

3. Estimate the area under $f(x) = 4 - 3x^2$, for $0 \leq x \leq 1$, using 3 rectangles and:

[3] (a) Left endpoints.

[3] (b) Right endpoints.

4. Given that

$$\int_1^4 f(x)\,dx = 4, \int_1^6 f(x)\,dx = 7, \int_1^4 g(x)\,dx = -3, \text{ and } \int_4^6 g(x)\,dx = 1,$$

compute:

[2] (a) $\displaystyle\int_4^6 f(x)\,dx$

[2] (b) $\displaystyle\int_1^6 (f(x) + g(x))\,dx$