Math 1251: Quiz #1 **Winter 2018**

Name:	**A#:**	**Section:**

1. Compute $\int \left(\frac{3}{x} - \frac{x}{4} + 5\right) dx$

2. Find all functions $f(x)$ that satisfy $f'(x) = \sqrt{x} - e^x$ and $f(0) = 1$.

v1.1

Math 1251: Quiz #2 **Winter 2018**

Name:	**A#:**	**Section:**

1. Evaluate $\displaystyle\int_1^2 x(1-2x^2)\,dx$.

2. Approximate $\displaystyle\int_0^2 \sqrt{x}\,dx$ by a Riemann sum with $N = 4$ subintervals, using right endpoints. **Leave your answer as a sum.**

v2.1

Math 1251: Quiz #2 **Winter 2018**

Name:	**A#:**	**Section:**

1. Evaluate $\displaystyle\int_{-1}^{0} x^2(1+3x)\,dx$.

2. Approximate $\displaystyle\int_{1}^{2} e^x\,dx$ by a Riemann sum with $N = 4$ subintervals, using right endpoints. **Leave your answer as a sum.**

Math 1251: Quiz #3 **Winter 2018**

Name:	**A#:**	**Section:**

1. Find the area bounded between $y = x^2 + 1$ and $y = -x$ over the interval $0 \leq x \leq 2$.

2. Find the volume of the solid obtained by revolving the segment of the curve $y = \sqrt{x}$ between $x = 1$ and $x = 4$ about the x-axis.

v3.1

Math 1251: Quiz #3 **Winter 2018**

Name:	**A#:**	**Section:**

1. Find the area bounded between $y = 2x$ and $y = -x^2$ over the interval $1 \leq x \leq 3$.

2. Find the volume of the solid obtained by revolving the segment of the curve $y = e^x$ between $x = 0$ and $x = 1$ about the x-axis.

v3.2

Math 1251: Quiz #4 **Winter 2018**

Name:	**A#:**	**Section:**

1. Let $f(x, y) = y^3 - 3x^3y^2 + 2x^2 - x + 1$. Compute:

   (a) $\dfrac{\partial f}{\partial x}$

   (b) $\dfrac{\partial f}{\partial y}$

   (c) $\dfrac{\partial^2 f}{\partial y\, \partial x}$

2. The number of people who ride the bus in Halifax is a function $B(p, t)$ of the city's population p and the price t of a bus ticket. At any given point (p, t), would we expect the value of $\frac{\partial B}{\partial t}$ to be be positive or negative? Why?

Math 1251: Quiz #5 **Winter 2018**

Name:	**A#:**	**Section:**

1. Let $f(x, y) = 1 - 3x^2 + 6xy + y^2 - 5x - 3y$.

   (a) Find all possible points (x, y) at which f could have a local extremum.

   (b) Apply the second-derivative test to determine whether the points found in (a) are local maxima, local minima, or neither.

Math 1251: Quiz #5 **Winter 2018**

Name:	**A#:**	**Section:**

1. Let $f(x, y) = 2x^2 + 5xy + 5y^2 - 2x - y + 3$.

   (a) Find all possible points (x, y) at which f could have a local extremum.

   (b) Apply the second-derivative test to determine whether the points found in (a) are local maxima, local minima, or neither.

Math 1251: Quiz #6 **Winter 2018**

Name:	**A#:**	**Section:**

1. Compute $\displaystyle\int_0^1 \int_{-3}^3 (2x^3 - y^2 e^x)\, dy\, dx.$

2. Compute $\displaystyle\int \frac{x^3}{\sqrt{1+x^4}}\, dx$

v6.1

Math 1251: Quiz #7 **Winter 2018**

Name:	**A#:**	**Section:**

1. Use the trapezoid rule with $n = 3$ subintervals to estimate $\int_1^4 \sqrt{x}\, dx$.

2. A machine is installed today. After t years, it will be generating income at a rate of $10000e^{-t/10}$ dollars per year. Find the present value of the income generated by this machine over the next 5 years using a discount rate of 5%.

v7.1

Math 1251: Quiz #8 **Winter 2018**

Name:	**A#:**	**Section:**

1. Determine whether the improper integral $\displaystyle\int_0^\infty \frac{dx}{(2+x)^3}$ converges or diverges.

2. Find the unique function $y(t)$ that satisfies $y' = te^{-y}$ and $y(0) = 1$.

v8.1

Math 1251: Quiz #9 **Winter 2018**

Name:	**A#:**	**Section:**

1. Use an integrating factor to solve the equation $y' - 2ty = 4t$.

v9.1