MATH 132 **EXAM I** FALL 2012

This exam has 18 questions. Part I will have 16 multiple choice questions, 5 points each. Part II will have 2 hand graded questions, 10 points each. Please check to see that your exam is complete. Write your **ID NUMBER** (not your SS number) on the six blank lines on the top of your answer card, using one blank for each digit. After being sure of which answer you think is right, **shade in the corresponding box on your card.**
Trigonometry Formulas are attached to the end of this booklet.

1) Estimate the area under the graph of $f(x) = x^2 - 2x$ from x = 0 to x = 8 using 4 approximating rectangles and midpoints (i.e. using M_4).

$A)$ 100 $B)$ 101 $C)$ 102 $D)$ 103 $E)$ 104 $F)$ 105 $G)$ 106 $H)$ 107 $I)$ 108 $J)$ 109

2) Which of the following is a **Riemann sum** for the area under $f(x) = x^2$, $1 \leq x \leq 2$, using the **right endpoints** .

$A)\ \frac{1}{n}\sum_{i=0}^{n-1}(2+\frac{i}{n})^2$ $B)\ \frac{1}{n}\sum_{i=1}^{n}(2+\frac{i}{n})^2$ $C)\ \frac{2}{n}\sum_{i=0}^{n-1}(1+\frac{i}{n})^2$ $D)\ \frac{1}{n}\sum_{i=1}^{n}(1+\frac{i}{n})^2$

$E)\ \frac{1}{n}\sum_{i=1}^{n}(1+(\frac{i}{n})^2)$ $F)\ \frac{1}{n}\sum_{i=1}^{n}(\frac{i+1}{n})^2$ $G)\ \frac{2}{n}\sum_{i=0}^{n-1}(1+\frac{i+1}{n})^2$ $H)\ \frac{1}{n}\sum_{i=0}^{n-1}(\frac{i+1}{n})^2$

$I)\ \frac{1}{n}\sum_{i=1}^{n}(2+\frac{i+1}{n})^2$

3) Find the average value of the function $f(t) = t^2 - t$, on $[-2, 1]$.

$A)$ 0.25 $B)$ 0.5 $C)$ 0.75 $D)$ 1 $E)$ 1.25 $F)$ 1.5 $G)$ 1.75 $H)$ 2 $I)$ 2.25 J) 2.5

4) $\int_0^6 \frac{1}{4}x^2\, dx = \lim_{n\to\infty} \mathrm{R}_n$, where $\mathrm{R}_n = \sum_{k=1}^{n} f(c_k)\, \Delta x$, is the Riemann sum with c_k being the right endpoint. Using the formula, $\sum_{k=1}^{n} k^2 = \frac{n(n+1)(2n+1)}{6}$, we get $\mathrm{R}_n =$

$A)$ $3\,\frac{n(n+1)(2n+1)}{n^3}$ $B)$ $6\,\frac{n(n+1)(2n+1)}{n^3}$ $C)$ $9\,\frac{n(n+1)(2n+1)}{n^3}$ $D)$ $12\,\frac{n(n+1)(2n+1)}{n^3}$
$E)$ $16\,\frac{n(n+1)(2n+1)}{n^3}$ $F)$ $18\,\frac{n(n+1)(2n+1)}{n^3}$ $G)$ $24\,\frac{n(n+1)(2n+1)}{n^3}$ $H)$ $28\,\frac{n(n+1)(2n+1)}{n^3}$

5) The indefinite integral $\int \frac{e^z}{1+e^{2z}}\, dz = F(z) + C$, where $F(z) =$:

$A)\ e^{3z}$ $B)\ \frac{1}{1+e^{3z}}$ $C)\ sin^{-1}(2z)$ $D)\ ln(1+e^{2z})$ $E)\ tan^{-1}(z)$ $F)\ \sqrt{1+e^z}$
$G)\ (1+e^{2z})^{-2}$ $H)\ tan^{-1}(e^z)$ $I)\ 1+e^z$ $J)\ (1+e^z)^{-2}$

6) The integral $\int_0^{\pi/4} \frac{sin(t)}{1+tan^2(t)}\, dt$, has a solution $F(\frac{\pi}{4}) - F(0)$, where $F(t) =$:

$A)\ sec(t)$ $B)\ \frac{sec^2(t)}{2}$ $C)\ -\frac{sec^3(t)}{3}$ $D)\ sin(t)$ $E)\ -\frac{sin^2(t)}{2}$
$F)\ \frac{sin^3(t)}{3}$ $G)\ tan(t)$ $H)\ -\frac{tan^2(t)}{2}$ $I)\ \frac{cos^2(t)}{2}$ $J)\ -\frac{cos^3(t)}{3}$