MATH 1300: CALCULUS 1

September 14, 2005

1st MIDTERM TEST

YOUR NAME:

- ◯ **001** A. Pence .....(8am)
- ◯ **002** A. Spina .....(8am)
- ◯ **003** I. Becker .....(8am)
- ◯ **004** E. Frugoni .....(8am)
- ◯ **005** T. Seguin .....(9am)
- ◯ **006** I. Mishev .....(9am)
- ◯ **007** J. Johanson .....(9am)
- ◯ **008** J. Sanders .....(9am)
- ◯ **009** J. Nibert .....(9am)
- ◯ **010** J. Wiscons .....(10am)
- ◯ **012** V. Wong .....(11am)
- ◯ **013** E. Kim .....(11am)
- ◯ **014** T. Schumacher .....(12pm)
- ◯ **015** J. Clelland .....(1pm)
- ◯ **016** J. Meadows .....(2pm)
- ◯ **018** E. Angel .....(4pm)
- ◯ **019** C. Seacrest .....(4pm)

Show all your work.

Answers out of the blue and without any supporting work will receive no credit *even if they are right!*

Write clearly. **Box your final answers.**

No calculators allowed. **No cheat sheets allowed.**

After you get the test back, if you consider that something was incorrectly graded,
DO NOT WRITE ON YOUR TEST!
As clearly as possible write down your version of the story on a clean sheet of paper, attach it to your test, and give it back to your instructor for further consideration.

DO NOT WRITE ON THIS BOX!

problem	points	score
1	5 pts	
2	10 pts	
3	18 pts	
4	12 pts	
5	20 pts	
6	15 pts	
7	20 pts	
TOTAL	100 pts	

1: *(5 points)* The graph of $y = 2 + \sqrt{x+3}$ is obtained from the graph of $y = \sqrt{x}$ by performing which one of the following (circle one):

A. translating horizontally 3 units to the right, then translating vertically 2 units up

B. translating horizontally 3 units to the left, then translating vertically 2 units up

C. translating horizontally 3 units to the right, then translating vertically 2 units down

D. translating horizontally 3 units to the left, then translating vertically 2 units down

2: *(10 points)* If $f(x) = \sqrt{4-x}$ and $g(x) = \dfrac{3}{x}$, find formulas for the compositions (it is not necessary to simplify your answers):

(a) $f(g(x))$

(b) $g(f(x))$

3: *(18 points)*
(a) Find the exact value of $\cos[\sin^{-1}(12/13)]$.

(b): Let $f(x) = \dfrac{1+2x}{5-3x}$. Find $f^{-1}(x)$ and state its domain.

(c): Find the domain and range of the function $f(x) = \ln(\ln x)$.

4: *(12 points)* Solve each equation for x:

(a) $\ln(4x) - 3\ln(x^2) = \ln 2$

(b) $\log_5(5^{2x}) = 8$

5: *(20 points)* Simplify the following expressions:

(a) $27^{2/3}$

(b) $\log_{10}(.01)$

(c) $\log_2 4^x$

(d) $\ln(e^4)$

(e) $e^{3 \ln x}$

6: *(15 points)* For the function f whose graph is shown here, evaluate:

(a) $f(-3)$

(b) $\lim_{x \to -3^-} f(x)$

(c) $f(2)$

(d) $\lim_{x \to 2^+} f(x)$

(e) For what values of x_0, $-4 < x_0 < 3$, does $\lim_{x \to x_0} f(x)$ NOT exist?

7: *(20 points)* Evaluate the limits:

(a) $\lim_{x \to 3} \dfrac{x-3}{x^2-x-6}$

(b) $\lim_{x \to 1} \dfrac{x^2-4x+4}{x^2+x-6}$

(c) $\lim_{t \to 4} \dfrac{4-t}{2-\sqrt{t}}$

(d) $\lim_{x \to \infty} \cos x$

(e) $\lim_{x \to \infty} \dfrac{3x^3+2x^2+6}{5x^3+6x+2}$