Multiple Choice

1.(5 pts.)   If $f(2) = 5$, $f(3) = 2$, $f(4) = 5$, $f(6) = -1$, $g(2) = 6$, $g(3) = 2$ and $g(4) = 0$, find $(fg)(3) + (f \circ g)(2)$.

(a)   4   (b)   2   (c)   1   (d)   3   (e)   5

2.(5 pts.)   Let a function $f(x)$ be given by $f(x) = \begin{cases} 2x + 1 & x > 0 \\ -x + c & x \leq 0 \end{cases}$. For what value of c is f continuous?

(a)   There is no such c.   (b) $c = 0$ (c) $c = 2$

(d) $c = 1$ (e) $c = 3$

3.(5 pts.) The set of vertical asymptotes for the graph

$$y = \frac{x^2 + 4x + 3}{x^2 - x - 2}$$

is which set below?

(a) $x = 1$ (b) $x = 2$ (c) $x = -1$ and $x = 2$

(d) $x = -1$ (e)   There are no vertical asymptotes.

4.(5 pts.) Compute $\displaystyle\lim_{x \to 6+} \frac{x^2 - 36}{x - 6}$.

(a)   12   (b) $+\infty$ (c)   6

(d)   0   (e)   Does not exist and is not $+\infty$.

3

5.(5 pts.) Find $f'(4)$ if $f(x) = 4\sqrt{x} - \dfrac{16}{\sqrt{x}}$.

(a) 0 (b) 3 (c) 4 (d) -1 (e) 2

6.(5 pts.) Find $\dfrac{d\,f}{dx}$ if $f(x) = (x^3 + 1)(x^2 + 1)$.

(a) $(x^2 + 1)(3x^2) + 2x(x^3 + 1)$ (b) $(2x)(3x^2) + (x^2 + 1)(x^3 + 1)$

(c) $5x^4 + 8x + 1$ (d) $6x^3$

(e) $(x^2 + 1)(4x^5) + 3x^4(x^3 + 1)$

7.(5 pts.) Find $f'(3)$ if $f(x) = \dfrac{x - x^2}{x + 2}$.

(a) $-\dfrac{25}{19}$ 　　　 (b) $-\dfrac{29}{25}$ 　　　 (c) $-\dfrac{19}{25}$ 　　　 (d) $-\dfrac{25}{41}$ 　　　 (e) $-\dfrac{41}{25}$

8.(5 pts.) If $f(x)$ is a differentiable function such that $f'(x) = f(x)$, which expression below is the derivative of the square of f?

I.E. Compute $\dfrac{d\big(f(x)\big)^2}{dx}$.

(a) $2f(x)$ 　　　　　　 (b) $f(x)$ 　　　　　　 (c) $2\big(f(x)\big)^2$

(d) $\big(f(x)\big)^2$ 　　　　　 (e) Cannot be determined from the given information.

9. (5 pts.) Given that f and g are differentiable at $x = 3$ and that $f(3) = -1$, $g(3) = 2$, $f'(3) = 3$ and $g'(3) = -4$, what is $\left(\dfrac{g}{f}\right)'(3)$?

(a) $\dfrac{1}{2}$ (b) $-\dfrac{1}{2}$ (c) $-\dfrac{2}{9}$ (d) 2 (e) -2

10. (5 pts.) For which graph below is $y = 2x + 1$ a tangent line?

:graphs:AnsE.eps :graphs:AnsA.eps :graphs:AnsD.eps

(a) =900 (b) =900 (c) =900

:graphs:AnsB.eps :graphs:AnsC.eps

(d) =900 (e) =900

Partial Credit
You must show your work on the partial credit problems to receive credit!

11.(10 pts.)   The line $y = 3x - 4$ is tangent to the graph $y = f(x)$ at the point $x = 2$. What are the values of $f(2)$ and $f'(2)$? Why are they what you claim?

12.(10 pts.)   Let $f(x) = \dfrac{1}{2x - 1}$.

(a)Using the limit definition of the derivative, find f'.

(b) Determine the domain of f'.

13. (10 pts.)   How and why can the Intermediate Value Theorem be used to show that

$$y = f(x) = \frac{x^5 - x - 2}{x + 1}$$

has a root between $x = 1$ and $x = 2$?

14. (10 pts.)   Draw the graph of a continuous function $y = f(x)$ with $f(0) = 2$, $f'(0) = 1$, $f'(-2) = 0$, and $f'(2) = -1$.

:graphs:BlankGraph.eps

=2400

15.(10 pts.)   A ball thrown in the air at 4 m/sec on planet X has height $s(t) = 3t + 2t^2 - t^3$
meters above the surface t seconds after it is thrown.
(a) Find the velocity at time t.
(b) Find the velocity when the ball hits the ground.

Instructor: ___ANSWERS___

Math 125 Exam I
Makeup

- The Honor Code is in effect for this examination. All work is to be your own.
- No calculators.
- The exam lasts for one hour.
- Be sure that your name is on every page in case pages become detached.
- Be sure that you have all 11 pages of the test.

Good Luck!

PLEASE MARK YOUR ANSWERS WITH AN X, not a circle!

1.	(a)	(b)	(c)	(•)	(e)
2.	(a)	(b)	(c)	(•)	(e)
3.	(a)	(•)	(c)	(d)	(e)
4.	(•)	(b)	(c)	(d)	(e)
5.	(a)	(b)	(c)	(d)	(•)
6.	(•)	(b)	(c)	(d)	(e)
7.	(a)	(b)	(•)	(d)	(e)
8.	(a)	(b)	(•)	(d)	(e)
9.	(a)	(b)	(c)	(d)	(•)
10.	(a)	(•)	(c)	(d)	(e)

DO NOT WRITE IN THIS BOX!

Total multiple choice: _____

11. _____

12. _____

13. _____

14. _____

15. _____

Total: _____

Name: _____

Instructor: _____

Math 125 Exam I
Makeup

- The Honor Code is in effect for this examination. All work is to be your own.
- No calculators.
- The exam lasts for one hour.
- Be sure that your name is on every page in case pages become detached.
- Be sure that you have all 11 pages of the test.

Good Luck!

PLEASE MARK YOUR ANSWERS WITH AN X, not a circle!

1.	(a)	(b)	(c)	(d)	(e)
2.	(a)	(b)	(c)	(d)	(e)
3.	(a)	(b)	(c)	(d)	(e)
4.	(a)	(b)	(c)	(d)	(e)
5.	(a)	(b)	(c)	(d)	(e)
6.	(a)	(b)	(c)	(d)	(e)
7.	(a)	(b)	(c)	(d)	(e)
8.	(a)	(b)	(c)	(d)	(e)
9.	(a)	(b)	(c)	(d)	(e)
10.	(a)	(b)	(c)	(d)	(e)

DO NOT WRITE IN THIS BOX!

Total multiple choice: _____

11. _____

12. _____

13. _____

14. _____

15. _____

Total: _____