Math 150  NEATLY PRINT YOUR LEGAL NAME: ________________________________

Exam 2  STUDENT ID: ____________________

Fall 2012  DATE: _________________________

SECTION: Circle your correct section number.

Tuesday recitations:  501  503  505  507  509  511  525  527  529
Thursday recitations:  502  504  506  508  510  512  526  528  530

TEST NO.: APPLE

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

________________________________
Signature of student

Academic Integrity Task Force, 2004

My signature in this blank allows my instructor to pass back my graded exam in class or allows me to pick up my graded exam in class on the day the exams are returned. If I do not sign the blank or if I am absent from class on the day the exams are returned, I know I must show my Texas A&M student ID during my instructor’s office hours to pick up my exam.

Signature of student ________________________________

NO CALCULATORS ALLOWED!

This is a 10-question multiple-choice exam; there is no partial credit. Each problem is worth 5 points for a total of 50 points. There will be a 5-point bonus if you have no transgressions. Transgressions include not having the correct Scantron form 882E, not filling out your Scantron form or this exam correctly, having a folded or mutilated Scantron, having your cell phone ring or vibrate, not having your TAMU student ID, not following directions, not turning in your exam and Scantron on time (you must be finished filling in your Scantron and exam cover before time is called). The Scantron will not be returned so also mark all your answers on this test paper. You must put your first name and last name, as officially known by TAMU, on this exam cover as well as on your Scantron; no nicknames or middle names, without your first and last name. The Scantron will not be returned so also mark all your answers on this exam paper. Your exam grade (sum of both exam parts) will be posted in WebAssign. You may not discuss the contents of the exam with anyone until the exam is returned in class.

Note: It is a violation of the Aggie Honor Code to continue writing or taking the exam after time is called.

ALL CELL PHONES MUST BE TURNED OFF AND PLACED IN YOUR BACKPACK!

SCANTRON: Please double check to make sure you have completed your Scantron correctly, as shown below.

Name: print your legal name neatly
Subject: Math 150  Test No.: APPLE
Date: October 2012  Period: your section number
1. Describe the transformation of \( y = 2f(-x) + 5 \).
   
   a. Horizontal stretch by a factor of 2, reflect about the y-axis, then up 5 
   b. Vertical stretch by a factor of 2, reflect about the y-axis, then up 5 
   c. Vertical stretch by a factor of 2, reflect about the y-axis, then left 5 
   d. Vertical stretch by a factor of 2, reflect about the x-axis, then up 5 
   e. Horizontal stretch by a factor of 2, reflect about the x-axis, then left 5 

2. What is the domain \( D \) and range \( R \), respectively, of the graph below?

   ![Graph Image]

   a. None of these 
   b. \( D: (-\infty, \infty); R: [-3, 4] \) 
   c. \( D: [-3, 6]; R: [-3, 4] \) 
   d. \( D: (-3, 3); R: [4, 6] \) 
   e. \( D: [-3, 4]; R: (-3, 6] \) 

3. Find the slope-intercept form of a line that passes through the point \((4, -9)\) and that is perpendicular to the line \( y = \frac{1}{5}x + 2 \).

   a. \( y = -5x - 13 \) 
   b. \( y = 5x + 11 \) 
   c. \( y = -\frac{1}{5}x - \frac{41}{5} \) 
   d. \( y = 5x - 13 \) 
   e. \( y = -5x + 11 \)
4. On planet Elephant Walk, a marble is thrown straight upwards and its height $h$ meters after $t$ seconds is given by $h(t) = -16t^2 + 48t + 4$. What is the maximum height in meters of the marble?

   a. 40 meters  
   b. $\frac{3}{2}$ meters  
   c. None of these  
   d. 32 meters  
   e. $\frac{7}{4}$ meters

5. Describe the end behavior of the polynomial $p(x) = (-3x^{13} + 2)(4x^{15} - 5)$

   a. None of these  
   b. As $x \to -\infty$, $p(x) \to \infty$ and as $x \to \infty$, $p(x) \to \infty$.  
   c. As $x \to -\infty$, $p(x) \to -\infty$ and as $x \to \infty$, $p(x) \to \infty$.  
   d. As $x \to -\infty$, $p(x) \to -\infty$ and as $x \to \infty$, $p(x) \to -\infty$.  
   e. As $x \to -\infty$, $p(x) \to \infty$ and as $x \to \infty$, $p(x) \to -\infty$.  

6. Given the graphs of $f$ and $g$ below, compute $\left[f \circ g\right](4)$.

   a. 0  
   b. $-2$  
   c. $-3$  
   d. None of these  
   e. $-4$
If \( f(x) = \begin{cases} \frac{5}{x}, & \text{if } x \leq -3 \\ |2-3x|, & \text{if } 2 < x < 5 \\ -x^3, & \text{if } x \geq 5 \end{cases} \), evaluate \( 8f(-4) + 2f(5) \).

\begin{align*}
a. & 240 \\
b. & \text{Does not exist.} \\
c. & -135 \\
d. & -260 \\
e. & 16
\end{align*}

8. Find the vertex \((h,k)\) of \( f(x) = -6x^2 - 48x - 99 \). What is the sum \( h+k \) ?

\begin{align*}
a. & 21 \\
b. & -7 \\
c. & -12 \\
d. & -20 \\
e. & 1
\end{align*}

9. Find the radius \( r \) and center \((h,k)\) of the circle \( 4x^2 + 4y^2 + 32x - 8y + 52 = 0 \). What is the sum \( r+h+k \) ?

\begin{align*}
a. & 1 \\
b. & -5 \\
c. & 5 \\
d. & -1 \\
e. & \text{None of these}
\end{align*}

10. It takes the experienced team 1 hour less than the inexperienced team to groom Kyle field before a major event. If they work together it takes \( \frac{12}{7} \) hours. How long does it take the experienced team to groom Kyle field by themselves?

\begin{align*}
a. & \frac{4}{7} \text{ hours} \\
b. & \frac{11}{7} \text{ hours} \\
c. & 3 \text{ hours} \\
d. & 4 \text{ hours} \\
e. & \text{None of these}
\end{align*}
Math 150
NEATLY PRINT NAME: ________________________________

Exam 2
STUDENT ID: ________________________________

Fall 2012
DATE: ________________________________

SECTION: Circle your correct section number.
Tuesday recitations: 501 503 505 507 509 511 525 527 529
Thursday recitations: 502 504 506 508 510 512 526 528 530

TEST NO.: WATERMELON

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

________________________________
Signature of student

Academic Integrity Task Force, 2004

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Signature of student ________________________________

NO CALCULATORS ALLOWED!

This is a 10-question work-out exam. Each problem is worth 5 points for a total of 50 points. Plus there is a 5-point bonus question. Write all solutions in the space provided as full credit will not be given without complete, correct accompanying work, even if the final answer is correct. Fully simplify all your answers, and give exact answers unless otherwise stated. Justify your answers algebraically whenever possible. Circle your final answer. Remember your units! You must put your first name and last name, as officially known by TAMU, on this exam cover; no nicknames or middle names, without your first and last name. Your exam grade (sum of both exam parts) will be posted in WebAssign. You may not discuss the contents of the exam with anyone until the exam is returned in class.

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Math Joke: If \( \lim_{{x \to 8}} \frac{1}{{(x-8)^2}} = \infty \) then \( \lim_{{x \to 4}} \frac{1}{{(x-4)^2}} = \)
1. If \( f(x) = \frac{2x - 10}{4 - x} \), find its inverse function, along with the inverse’s domain and range in interval notation.

Inverse function: _________________________________

Inverse function domain: ___________________________

Inverse function range: _____________________________

2. In interval notation, what is the domain of \( f(x) = \frac{\sqrt[4]{x + 8}}{\sqrt[3]{x^2 + x - 2}} \)?

Domain: _________________________________________

3. Given \( x^2 + 16y^2 + 2x^3y = 100 \).

   a. The \( x \)-intercept(s) are: _________________________

   b. The \( y \)-intercept(s) are: _________________________

   c. Its graph is symmetric about the (circle all that apply): \( x \)-axis \( y \)-axis origin
      (You do not have to show work on this part c.)
4. If \( f(x) = x^2 - 49 \) and \( g(x) = \frac{x-7}{x+8} \), find and simplify \( \left( \frac{g}{f} \right)(x) \) and its domain in interval notation.

\[
\left( \frac{g}{f} \right)(x) = \quad \text{Domain: } \quad \]

5. Use the given graph of \( y = f(x) \) to graph \( y = -f(x+3) - 2 \) on the same coordinate plane.

6. If \( f(x) = \frac{x}{5-x} \), evaluate and simplify the difference quotient. Remember to first give the general formula for the difference quotient.
7. Sketch any function that satisfies all of the following: is an even function whose domain is \((-8, 8)\); has a 
y-intercept of \(-4\); constant on the interval of \((0, 3)\); increasing on the interval \((3, 5)\); decreasing on the interval 
\((5, 8)\); zeros at 4 and 6; and has a maximum value of 2. You are not being graded on your artistic skills here; 
just draw a function that meets all of the requirements given.

![Graph](image)

8. Bentley wants to make 3 ml of a 24.6% alkaline solution by mixing a 12% alkaline solution with a 39% 
alkaline solution. How many ml of the 39% alkaline solution should be used? Remember your units!

Answer: _______________________________
9. What is the standard form of a circle that has the points \((2, -3)\) and \((-8, -7)\) as endpoints of one of its diameters?

Circle: ____________________________________________

5-point Bonus: In interval notation, give the domain of this circle.

10. Algebraically prove \(f(x) = \frac{3}{x-2}\) is a one-to-one function.