Math 150 **NEATLY PRINT YOUR LEGAL NAME**: _____

Exam 2 **STUDENT ID**: _____

Fall 2011 **DATE**: _____

SECTION: Circle your correct section number.

Tuesday recitations: 501 503 505 507 509 511

Thursday recitations: 502 504 506 508 510 512

TEST NO.: ***BASS***

"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
http://www.tamu.edu/aggiehonor/FinalTaskForceReport.pdf

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 _____

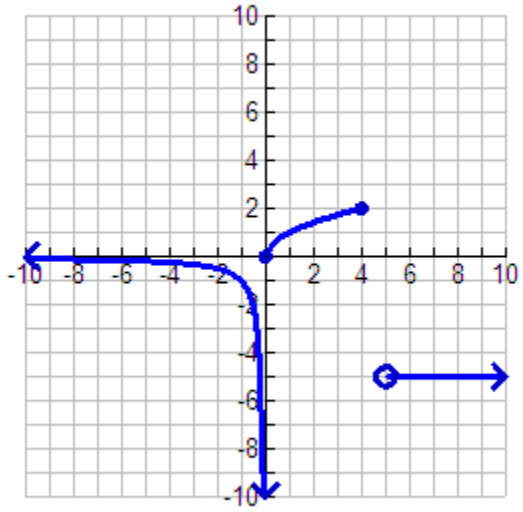
NO CALCULATORS ALLOWED!

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 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.*

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

Name: print your legal name neatly (***NO NICKNAMES***)
Subject: Math 150 **Test No.: *BASS***
Date: October 2011 **Period: your section number**

1. The graph represents which function?



a. $f(x)=\begin{cases} x^2 & \text{if } x<0 \\ \sqrt{x} & \text{if } 0\le x\le 4 \\ -5 & \text{if } x>5 \end{cases}$

b. $f(x)=\begin{cases} \dfrac{1}{x} & \text{if } x<0 \\ \sqrt{x} & \text{if } 0\le x<4 \\ -5 & \text{if } x\ge 5 \end{cases}$

c. $f(x)=\begin{cases} \dfrac{1}{x} & \text{if } x<0 \\ \sqrt{x} & \text{if } 0\le x\le 5 \\ -5 & \text{if } x>5 \end{cases}$

d. $f(x)=\begin{cases} x^2 & \text{if } x<0 \\ \sqrt{x} & \text{if } 0\le x\le 5 \\ -5 & \text{if } x>5 \end{cases}$

e. $f(x)=\begin{cases} \dfrac{1}{x} & \text{if } x<0 \\ \sqrt{x} & \text{if } 0\le x\le 4 \\ -5 & \text{if } x>5 \end{cases}$

2. Given the table of values for the function *f*, evaluate $g(-4)$ if $g(x)=-3f(x-2)+4$.

x	-10	-8	-6	-4	-2	0	2	4	6	8	10
$f(x)$	16	14	-12	-14	-20	18	20	-8	4	-6	12

a. 106
b. None of these
c. –14
d. 40
e. –56

3. If $f(x)=\frac{x^2}{2}$, $g(x)=\frac{3}{x}$, $h(x)=\sqrt{2x}$, and $p(x)=-3$ which one of the following functions is NOT a one-to-one function?

   a. $f(h(x))$
   b. $(fg)(x)$
   c. $(gg)(x)$
   d. None of these
   e. $(4g-5p)(x)$

4. Find the sum of the values of the *y*-intercept(s) of the equation $x^3y+y^2+x^2-xy^4+y-4x=12$. If there is only one *y*-intercept, give its value.

   a. None of these
   b. –1
   c. –4
   d. 1
   e. 4

5. What is the exact distance between the points $(2,-4)$ and $(-6,a)$?

   a. $\sqrt{a^2-8a+32}$
   b. $\sqrt{a^2+8a+80}$
   c. None of these
   d. $\sqrt{a^2-8a+80}$
   e. $\sqrt{a^2+8a+32}$

6. Find the vertex (p,q) of the quadratic function $y=-2x^2+16x+40$. What is the sum of p and q?

   a. $p+q=-2$
   b. None of these
   c. $p+q=8$
   d. $p+q=76$
   e. $p+q=-68$

7. Which of the following are symmetric with respect to the *x*-axis? Circle all correct answers.

   a. $5y^4 = 3x + 16$
   b. None of these
   c. $x^6 + y^3 = 57$
   d. $2y - 7 = 3|x|$
   e. $3xy = 7x^{-1}y^{-2}$

8. What is the standard equation of a circle whose diameter is 12 meters and whose center is the midpoint of the line segment with endpoints $(3,12)$ and $(5,8)$?

   a. $(x+4)^2 + (y+10)^2 = 36$
   b. $(x-4)^2 + (y-10)^2 = 144$
   c. $(x+2)^2 + (y-4)^2 = 144$
   d. $(x-2)^2 + (y+4)^2 = 36$
   e. $(x-4)^2 + (y-10)^2 = 36$

9. What is the domain of the function $f(x) = \dfrac{\sqrt[4]{x+5}}{\sqrt{(x-2)(x-3)}}$.

   a. None of these
   b. $(-\infty, -5] \cup (2,3) \cup (3,\infty)$
   c. $[-5,2) \cup (2,3) \cup (3,\infty)$
   d. $[-5,2) \cup (3,\infty)$
   e. $(-\infty,2) \cup (3,\infty)$

10. A boat can travel 10 miles downstream in the same time it can travel 8 miles upstream. If the speed of the current is 4 miles per hour, what is the speed of the boat?

    a. 4 miles per hour
    b. 46 miles per hour
    c. 36 miles per hour
    d. 31 miles per hour
    e. None of these

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Exam 2 **STUDENT ID**: _____

Fall 2011 **DATE**: _____

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TEST NO.: ***CATFISH***

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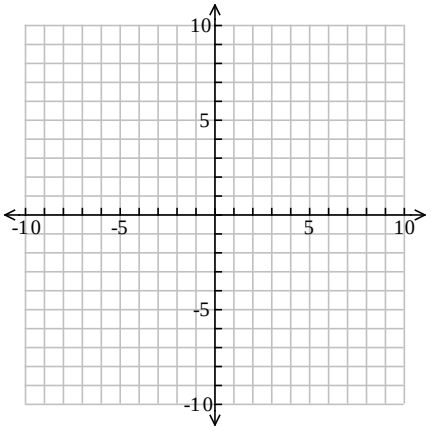
NO CALCULATORS ALLOWED!

This is a 10-question work-out exam. Each problem is worth 5 points for a total of 50 points. 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!

MATH JOKE: How do they prove that all odd integers higher than 2 are prime?

Mathematician: 3 is a prime, 5 is a prime, 7 is a prime, and by induction - every odd integer higher than 2 is a prime.
Physicist: 3 is a prime, 5 is a prime, 7 is a prime, 9 is an experimental error, 11 is a prime,...
Programmer: 3 is a prime, 5 is a prime, 7 is a prime, 7 is a prime, 7 is a prime,...
Salesperson: 3 is a prime, 5 is a prime, 7 is a prime, 9 -- we'll do for you the best we can,...
Computer Software Salesperson: 3 is prime, 5 is prime, 7 is prime, 9 will be prime in the next release,...
Biologist: 3 is a prime, 5 is a prime, 7 is a prime, 9 -- results have not arrived yet,...
Lawyer: 3 is a prime, 5 is a prime, 7 is a prime, 9 -- there is not enough evidence to prove that it is not a prime,...
Accountant: 3 is prime, 5 is prime, 7 is prime, 9 is prime, deducing 10% tax and 5% other obligations.
Statistician: Let's try several randomly chosen numbers: 17 is a prime, 23 is a prime, 11 is a prime...
Professor: 3 is prime, 5 is prime, 7 is prime, and the rest are left as an exercise for the student.
Computational linguist: 3 is an odd prime, 5 is an odd prime, 7 is an odd prime, 9 is a very odd prime,...
Psychologist: 3 is a prime, 5 is a prime, 7 is a prime, 9 is a prime but tries to suppress it,...
-http://www.workjoke.com/mathematicians-jokes.html

1. Shade the region of the coordinate plane that contains the set of ordered pairs $\{(x, y) \mid -5 \le x < 5, y \ge 2\}$.



2. Describe the end behavior of the polynomial: $p(x) = 84 + \frac{7}{4}x^8 + 49x^3 + \frac{1}{15}x^4 - 7x^9$.

As $x \to -\infty$, $p(x) \to$ _____

As $x \to \infty$, $p(x) \to$ _____

3. If $f(x) = 3\sqrt{2x+4}$ and $g(x) = \frac{6}{x^2}$, then find and simplify $g \circ f$.

$(g \circ f)(x) =$

5-point Bonus: In interval notation, what is the domain of $g \circ f$?

4. Find the slope-intercept equation of the line that passes through the point (2, 4) and that is perpendicular to the line $y = \frac{-1}{3}x + 8$.

$y =$ _____

5. If $f(x)=\frac{x+8}{2x-4}$, find its inverse function, along with its domain.

$f^{-1}(x)=$ _____

In interval notation, what is the domain of f^{-1}? _____

6. An object that is thrown straight upwards will reach a height $h(t)=-6t^2+11t$ meters after *t* seconds. At exactly what time(s) will the object reach a height of 4 meters? Remember your units!

$t=$ _____

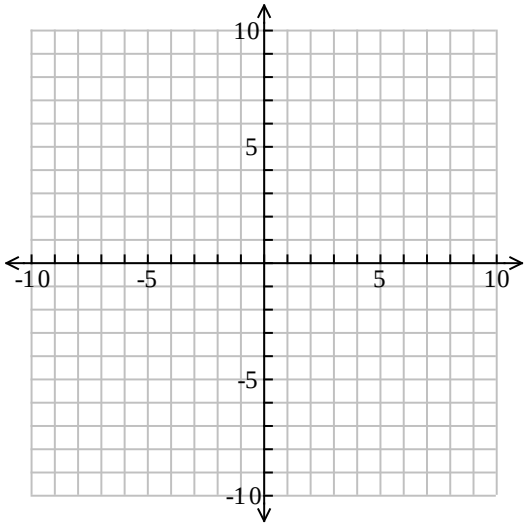
7. Find the center and radius of the circle $5x^2+5y^2+4y+405=90x$.

Center: _____

Exact radius: _____

8. If $f(x)=\dfrac{-4}{x-1}$, evaluate and simplify the difference quotient. Remember to first give the general formula for the difference quotient.

9. Sketch any function that satisfies ***all*** of the following: is an ***even*** function; has $(-\infty,\infty)$ as its domain; is increasing on the intervals $(0,5)$ and $(9,\infty)$; is decreasing on the interval $(5,9)$; has *x*-intercepts at 8 and 10; has a *y*-intercept of 5; has a local minimum value of -1; and has a local maximum value of 10. You are not being graded on your artistic skills here; just draw a function that meets ***all*** of the requirements given.



10. By itself it takes Pipe B one more hour than Pipe A by itself to fill a small pool. If both pipes are used it takes $\dfrac{2}{3}$ hours to fill the pool. How long does it take each pipe to fill the small pool by itself? Remember your units.

Pipe A: _____

Pipe B: _____