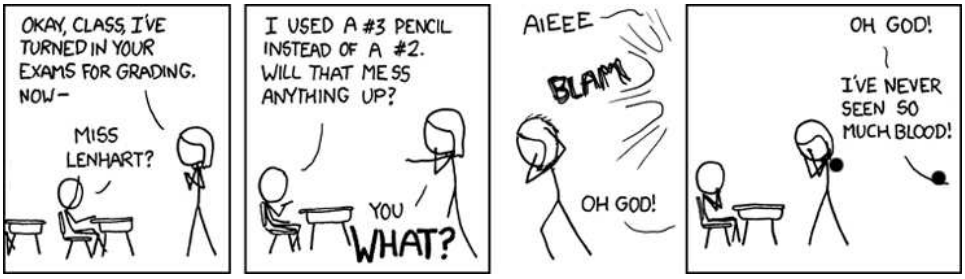
Math 150 Section 513-518 Exam 1 – Jean Marie Linhart Fall 2009

"An Aggie does not lie, cheat, or steal or tolerate those who do"

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

Printed name:_____

Signature:_____



xkcd.com

Math Facts You Might Find Useful:

$13^2 = 169$ $14^2 = 196$ $15^2 = 225$ $16^2 = 256$ $17^2 = 289$
$18^2 = 324$ $19^2 = 361$ $20^2 = 400$ $21^2 = 441$ $22^2 = 484$
$23^2 = 529$ $24^2 = 576$ $25^2 = 625$

$2^3 = 8$ $2^4 = 16$ $2^5 = 32$ $2^6 = 64$ $2^7 = 128$ $2^8 = 256$
$2^9 = 512$ $2^{10} = 1024$

A number is divisible by 3 if its digits add up to a number divisible by 3.
A number is divisible by 9 if its digits add up to a number divisible by 9.
This is not true for other factorizations!

- Read each question carefully.
- Circle each multiple choice answer **and show your work.**
- You may not use any notes, a calculator, or your book.
- Your cellphone must be turned off and put away during this exam!
- You may not collaborate with your neighbors on this exam.
- You must show all appropriate work to receive credit, especially partial credit.
- If you use a formula, WRITE IT DOWN.
- The instructor will provide additional scratch paper if needed.
- You must put your name on any scratch paper and hand it in with your exam.
- Fold your exam in half before handing it in.
- GOOD LUCK!!!!!!!

1. (10 points) Perform polynomial long division on $(x^3 - 2x + 8) \div (x - 2)$. Identify the remainder and express it as a fraction of the divisor.

A) $\frac{-12}{x-2}$ B) $\frac{8}{x+2}$ C) $\frac{12}{x-2}$ D) $\frac{-8}{x+2}$ E) None of these

2. (6 points) Multiply out completely

$$[(x+4)(x-4)]^2$$

3. (9 points) Solve for x:

$$\sqrt{x+10} - x = 5$$

4. (8 points) Find all possible solutions for x.

$$-2|-2-x| = 2x - 8$$

A) $x \in \{2, 1\}$ B) $x \in \{3, 1\}$ C) $x \in \{-6, 1\}$ D) $x \in \{1\}$ E) None of these

5. (8 points) Simplify completely

$$\frac{2x-10}{x^2+x-2} \div \frac{x^2-25}{x^2+9x+14}$$

(5 points extra credit) state all restrictions on the variable in the equation above.

6. (10 points) Simplify completely and state all restrictions on the variable.

$$\frac{\frac{3}{y} - \frac{6}{5y+2}}{7 - \frac{8}{y}}$$

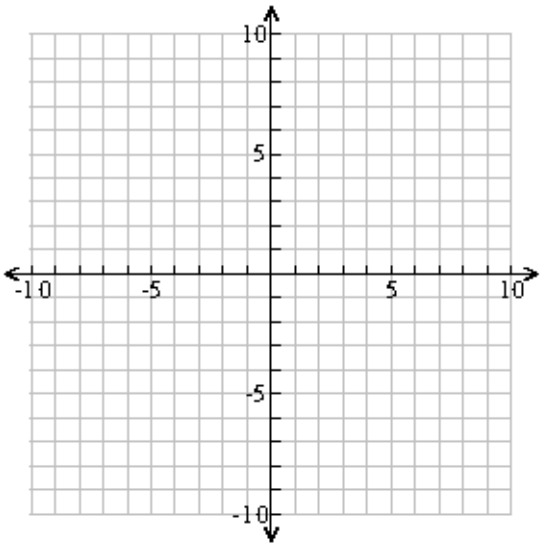
7. (8 points) Let $a > 0$ be any positive real number. Solve for x:

$$| 2x - 3 | \geq 8a + 1$$

A) $(-\infty, -4a+1) \cup (4a+2, \infty)$ B) $(-\infty, -4a-2) \cup (4a+2, \infty)$ C) $(-4a+1, 4a+2)$

D) $(-4a - 2, 4a + 2)$ E) None of these

8. (5 points) Shade the region of the coordinate plane that contains the set of ordered pairs $\{x, y | x > 6, y \leq -3\}$



9. (6 points) Fully simplify leaving a radical symbol in your answer (no fractional exponents):

$$\sqrt[14]{3^{14}x^{28}y^{14}z^{15}}$$

10. (6 points) Fully simplify

$$\left(\sqrt{-16} - 1\right)\left(\overline{-5 + 6i}\right)$$

11. (6 points) Fully simplify

$$|-3(7-4i)|$$

A) $\sqrt{65}$ B) 25 C) $3\sqrt{65}$ D) 33 E) None of these

12. (8 points) Find the standard equation of the circle whose center is the midpoint of the line segment with endpoints $(-2, 4)$ and $(8, 6)$ and whose diameter is $\sqrt{2}$.

A) $(x-3)^2+(y-5)^2 = \frac{1}{2}$ B) $(x+5)^2+(y+1)^2 = 2$ C) $(x+5)^2+(y+1)^2 = \frac{1}{2}$

D) $(x-3)^2 + (y-5)^2 = 2$ E) None of these

13. (10 points) Fully simplify

$$\frac{\left(\frac{1}{5}\right)^{-20} + \left(5^2\right)^{11}}{\left(5^3\right)^7 - 5^{23}}$$

A) 5^{44} B) $\frac{-5}{24}$ C) $\frac{1}{24}$ D) $\frac{-13}{60}$ E) none of these

Please fold your exam in half with this side out.

513	M 1:50-2:40	CE 134
514	W 1:50-2:40	CE 134
515	M 11:30-12:20	ZACH 104D
516	W 11:30-12:20	ZACH 104D
517	M 12:40-1:30	CE 137
518	W 12:40-1:30	CE 137

Printed name:

_____

First 3 letters of last name:

____ ____ ____

Circle your section:

513 514 515

516 517 518