24.5

Name: Key

Test #1a – Math 13 Spring 2008

**Instructions:** *Please show all pertinent work for each problem and box the final answer. Remember that a correct answer does not assure full credit; credit will be assigned for correct work as well as for the correct answer, with emphasis on work. You may not use a calculator for this exam. Please attach your note card to the back of the test. Good luck!!*

1. Give the following set as indicated.

**The whole numbers between 1 and 5, including 5.**

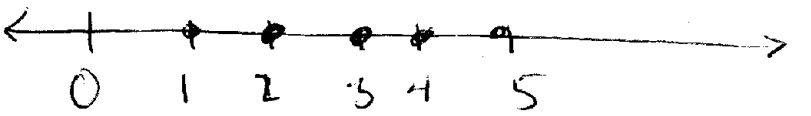
a) Using set builder notation

$\{x \mid x \in W, 1 < x \leq 5\}$

b) Using roster form

$\{1, 2, 3, 4, 5\}$

c) On a number line




comment only no pts.

2. Of the following, which is a true statement (circle your answer):

a) 4 is a element of {-1, 4, 5}

b) {6} is a element of {-1, 4, 5}

c) {-1, 4, 5} is a element of {4}

d) {4} is a element of {-1, 4, 5}

3. Of the following, which is a true statement (circle your answer):

a) 6 is a subset of {-1, 4, 6}

b) {6} is a subset of {-1, 4, 6}

c) {-1, 3, 5} is a subset of {3}

d) {4} is a subset of {-1, 3, 5}

4. Use <, > or = to compare the following. Show all work to get one number to compare to another!

a) +1½ $-2^2$ < $(-2)^2$

$-2 \cdot 2$

$-4$

$-2 \cdot -2$

$4$

b) +1 $(2\frac{1}{2})(1\frac{1}{2})$ > $2\frac{1}{4}$

$\frac{5}{2} \cdot \frac{3}{2} = \frac{15}{4}$

$\frac{9}{4}$

c) +2½ $(\frac{5}{6} - 1\frac{1}{3})$ < $(-\frac{1}{5} \div \frac{2}{3})$

$-\frac{1}{2}$

$1\frac{2}{6}\ \frac{3}{6}$

$\frac{5}{6}$

$\frac{3}{6} = \frac{1}{2}$

$-\frac{1}{5} \cdot \frac{3}{2} = -\frac{3}{10}$

d) +2½ $-|-6|$ < $-(-6)$

$-6$

$+6$

+7½



+8½

5. Evaluate the following (show expansion):

a) $(4)^{1/2}$ $\sqrt{4}$ 2

b) $\sqrt[3]{-27}$ $\sqrt[3]{-3}$

c) $\sqrt{-121}$ No IR sol.

d) $\sqrt{\frac{49}{144}} = \frac{7}{12}$

6. Evaluate using order of operations (show all work; each step in order of op.)

a) $7 + 28 \div 7 \bullet 2 - 3 = 7 + 8 - 3 = 15 - 3 = 12$

+½ just for order of op.

b) $\frac{-2|6-27| \div 3 + 3}{\sqrt{16} - 64 \div 4^2} = \frac{-42 \div 3 + 3}{4 - 4} = \frac{-1}{0}$ = undefined

7. Match each of the following properties with the example that best exhibits the property. *(Write the letter of the property on the line beside the example that best shows it.)*

E $(5 \bullet 2) \bullet y = 5 \bullet (2y)$

A $(2 + 3) + 8 = 8 + (2 + 3)$

G $-6 \bullet -\frac{1}{6} = 1$

C $\frac{1}{2}(2 + z) = 1 + \frac{1}{2}z$

H $5 + 0 = 5$

a) ~~Commutative Prop. of Addition~~
b) Commutative Prop. of Mult.
c) ~~Distributive Prop.~~
d) Associative Prop. of Addition
e) ~~Associative Prop. of Mult.~~
f) Inverse of Addition
g) ~~Inverse of Multiplication~~
h) ~~Identity of Addition~~
i) Identity of Multiplication

8. For each of the following give the correct answer:

a) $-251 \div 0$ = undefined

b) $0 \div 502$ = zero

c) $25{,}710 \bullet 0$ = zero

9. Assume the following: A = {1,2,3,4,5}
B = {2,4,6,8}
C = {1,3,5,7}

a) $A \cap B$ {2,4}

b) $A \cup B$ {1,2,3,4,5,6,8}

c) $B \cap C$ ∅ or { }

Not graded Just comment

+3½

+7

+10½

10. Clear and then solve the following:

$\frac{3}{5}\cdot\frac{4}{3}x - \frac{15}{1}\cdot 6 = 5\cdot\frac{15}{1} + \frac{4}{5}\cdot\frac{15}{3}x - \frac{7}{5}\cdot\frac{15}{3}$ LCD = 15 +½ Clearing +3

$20x - 90 = 75 + 12x - 21$ +½ +½ +½ +½ +½

Simplify +½ $20x - 90 = 54 + 12x$

+1 $-12x \quad -12x$

$8x - 90 = 54$

$+90 \quad +90$ +1

$\frac{8x}{8} = \frac{144}{8}$ +1

$\frac{1}{8}\cdot 8x = \frac{144}{8}$

$x = 18$

+6½

11. On the following graph, graph both the ~~following~~ equations. Don't forget to label both graphs with their equations.

$3x - 2y = 6$ (Make sure to use 3 points and label them.)

$y = -x^2 + 3$ (Make sure to use 5 points and label them.)

| x | y |
|---|---|
| 0 | 3 |
| 1 | 2 |
| -1 | 2 |
| 2 | -1 |
| -2 | -1 |

$-(1)^2+3 = -1+3 = 2$

$-(2)^2+3 = -4+3 = -1$

Let $x=0$ $-2y=6 \Rightarrow y=-3$ (0,-3)

$y=0$ $3x=6 \Rightarrow x=2$ (2,0)

$x=-2$ $3(-2)-2y=6$ (-2,-6)

$-6-2y=6$

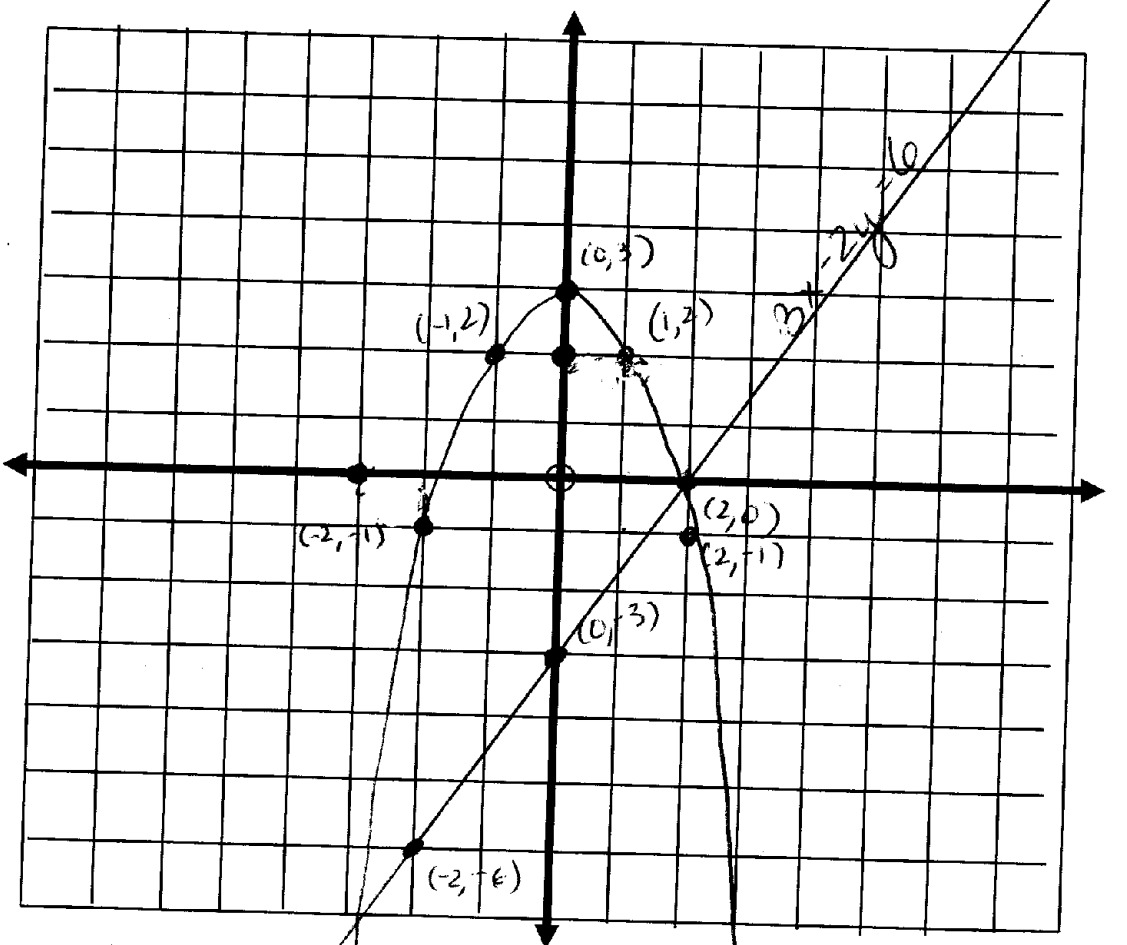
$-2y=12$

$y=-6$

(1,-1.5)

(6,6)

(4,3)




Just comment



+6½