Name _____ **Math 1302 – Exam I – Feb. 10, 2006--Total Absences** _____

1. Give me an example of

    a) the associative law of addition → _____

          b) a rational number that is not an integer _____

             c) an integer that is not a whole number _____

2. Complete each of the following

    a) by using the commutative law of multiplication $(3 \cdot x)$ = _____

        b) the additive identity of the set of real numbers → _____

          c) the multiplicative inverse of the number $(- 4)$ → _____

3. Simplify to a single number in simplest form. If a number does not have a real number value, then write NO REAL VALUE – Do NOT USE a CALCULATOR in this section.

    a) $(- 4^{0})$ = _____   **b)** $- 25^{-\frac{1}{2}}$ = _____   **c)** 0^{1} = _____

    d) $(- 8 / 27)^{-2/3}$ = _____   **e)** $\sqrt{24}$ = _____   **f)** $\sqrt[3]{-16}$ = _____

4. Evaluate if x = -2 and y = - 1 and write in simplest form.

    a) $-x^{y}$ = _____   **b)** $\dfrac{x - y}{x + y^{0}}$ = _____

5. Find each of the following absolute values. . Write without absolute value symbols and without parenthesis or grouping symbols of any kind. Exact answers – no calculator .

    a) $4 - | 3 - \sqrt{5} |$ = _____   **b)** $4 - (| 8 | - | - 10 |)$ = _____

6. True or False.

_____ a) All natural numbers are greater than 0 .

_____ b) The product of any two real numbers is either positive or negative.

_____ c) $x^2 + 9 = (x - 3)(x + 3)$

7. Perform the given operations and simplify.

a) $4 - 3[-2 - (4 - 5)] =$ _____

b) $4 - 2^2 \bullet (-4 + 8) \div 2 =$ _____

8. Use the rules of exponents to simplify. Leave your results with nonnegative exponents – Do not write in terms of radicals. Simplify coefficients as much as possible.

a) $(3x^{-2})^3 =$ _____

b) $(3x^2)(-2x^{-3}y) =$ _____

c) $(-2x^{-3})^2 \bullet (4x^3)^2 =$ _____

d) $(9x^2 y^4)^{-1/2} =$ _____

f) $\dfrac{4x^2 y^5}{12x^5 y^3} =$ _____

g) $\dfrac{-4x^{-1} y^{-3}}{2x^{-3} y^2} =$ _____

h) $\left(\dfrac{-6x^{-2} y^{-3}}{2x^2 y^{-4}}\right)^2 =$ _____

9. Use the rules of radicals and fractional exponents to simplify.

a) $\sqrt{49x^4y^2}$ = _____

b) $\sqrt[3]{-8x^6}$ = _____

c) $\sqrt{9+16}$ = _____

d) $2\sqrt{8} - 3\sqrt{18}$ = _____

10. Perform the given operation -- Do not factor.

a) $(3x^2 - 4x + 6) - 2(x^2 - 2x + 3)$ = _____

b) $3x^2y (x + 2y)$ = _____

c) $x - 2(x + 2)$ = _____

d) $(x - 3y)^2$ = _____

11. Find the GCF of the following

a) GCF(80, 125) = _____

b) GCF($12x^2y^4$, $20xy^5$) = _____

12. Find the LCM of

a) LCM (16, 12) = _____

b) LCM ($6xy^2$, $8x^3y^4$) = _____

3

13. **Factor each of the following polynomials - If polynomial does not factor, then write PRIME to indicate that it is a prime polynomial.**

a) $x^2 + x + 100 = $ _____

b) $3(x - 2y) + 5y(x - 2y) = $ _____

c) $32x^4 + 4x = $ _____

d) $x^4 - 16y^4 = $ _____

e) $xy + x + 2y + 2 = $ _____

f) $x^2 - 24x + 144 = $ _____

g) $x^2 - 12x + 32 = $ _____

h) $2x^2 + 7x - 4 = $ _____

14. **Find the degree of each of the following polynomials.**

a) $8^2 x^3 y^5$ ➔ _____

b) $1 + 5x^8 - 2x^4 y^5$ ➔ _____

15. **Reduce each of the following algebraic fractions to lowest terms – by factoring and then canceling.**

a) $\dfrac{x^3 + y^3}{x^2 - y^2} = $ _____

b) $\dfrac{x^2 - x - 6}{3x - 9} = $ _____

c) $\dfrac{|x| - |1 - x|}{|x|} = $ _____ if x is known to be greater than 1.

4

16. More radicals - exact answers required.

a) $\sqrt[4]{64x^6 y^3}$ • $\sqrt[4]{4x^2 y}$ = _____

b) $\sqrt[6]{4x^2 y^4}$ = _____

c) $\sqrt[3]{40}$ = _____

d) $\sqrt[3]{\sqrt[4]{64}}$ = _____

17. More Radicals.

a) $\dfrac{6}{\sqrt{4x}}$ = _____

c) $\sqrt[3]{4}$ • $\sqrt{2}$ = _____

Omit(d) $\dfrac{4}{1-\sqrt{5}}$ = _____

e) $\sqrt[3]{\dfrac{2}{36x}}$ = _____

18. A dress sells for $62 and there is an 8 % sales tax.   How much change will you get back if you paid with three twenties and a ten dollar bill ?

19. Simplify by using the rules of exponents. No radicals in your final solution. No negative exponents in your final solution.

a) $x^{1/2}\ x^{1/4}$ = _____

b) $x^{1/4} \div x^{1/2}$ = _____

20. If x is assumed to be any real number then
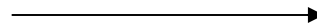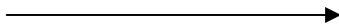
what is

a) $\sqrt{x^2}$ = _____

b) $\sqrt[3]{-x^3}$ = _____

c) $\sqrt{-4}$ = _____

21. Use a number line to sketch each of the following

a) $x > -4$

b) $x \leq 2$

22. **Is this a commutative idea –**
" studying for a test : taking the test" ? Explain !

23. **Write the numbers in scientific notation.**

a) **234.2 =** _____

b) **0.0032 =** _____

24. **An item is selling at Price P. The item is reduced by 10 % . After not selling for a week , it is reduced an additional 10 % off from the reduced price. If it sells at this point, what percentage of the original price was the item sold for before taxes ?**

25. **Find the area of the shaded region.**

X

X

3

3