Math 1200 College Algebra Exam 1A Fall 2014 Name_____

Show all your work in order to get full credit. Each question (including each part) is worth 6 points, but # 9 (a and b) are each worth 5 points. Please note that use of **calculators or cell phones are not allowed during class.**

1. Simplify the expression using exponential properties. $\frac{5x^{-2}y^{-5}}{7x^{-3}y^{2}}$

$= \frac{5}{7}\left(\frac{x^{-2}}{x^{-3}}\right)\left(\frac{y^{-5}}{y^{2}}\right)$

$= \frac{5}{7}x^{-2+3}y^{-5-2}$

$= \frac{5}{7}\times y^{-7}$

$= \frac{5}{7}\cdot\frac{x}{y^{7}} = \frac{5}{7}\frac{x}{y^{7}}$

2. Given the polynomial $-x^4+3x^2+3x^5+x+2$.

a. What is the degree?

5

b. What is the Leading Term?

$5x^5$

3. Simplify $\frac{7}{2}\sqrt{8}-\frac{8}{5}\sqrt{25}$.

$\frac{7}{2}\sqrt{4\cdot 2}-\frac{8}{5}(5)$

$= \frac{7}{2}\cdot 2\sqrt{2}-8$

$= 7\sqrt{2}-8$

4. Multiply $(\sqrt{y}+3)(\sqrt{y}-3)$.

$(\sqrt{y})^2-(3)^2$

$= (y^{\frac{1}{2}})^2-9$

$= y-9$

5. Factor a. $2x^2+x-15$

$= 2x^2+6x-5x-15$

$= 2x(x+3)-5(x+3)$

b. $xy+4x-8y-2y^2$

$= x(y+4)-2y(4+y)$

$= (x-2y)(y+4)$

Simplify the expression completely.

6. $\frac{x+4}{2x+16}\div\frac{3x+12}{x+8}$

$= \frac{(x+4)}{2(x+8)}\cdot\frac{(x+8)}{3(x+4)}$

$= \frac{1}{2}$

7. Evaluate $7-\{2+4[2-(2-8)^2]\}$

$= 7-\{2+4[2-36]\}$

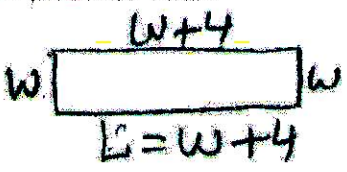
$= 7-[2+4(-34)]$

$= 7-[2-136]$

$= 7-[-134]$

$= 141$

8. A contractor needs to tile the floor of a rectangular room that is 4 feet longer than it is wide. If the perimeter of the room is 48 feet, find the dimensions of the room.



Perimeter: $2(w+4)+2w=48$

$2w+8+2w=48$

$4w+8=48$

$4w=40$

$w=10$

$L=14$

9. Write each statement as an inequality.

a. x is at most 3.

$x \leq 3$

b. y is at least 8.

$y \geq 8$

Solve for the variable(s)

10. $(w-4)+5=10-(w+1)$

$w-4+5=10-w-1$

$w+1=9-w$

$2w=8$

$w=4$

11. $\frac{1}{y+2}=\frac{5}{2y-5}$ $y \neq -2, y \neq \frac{5}{2}$

Cross Multiply

$2y-5=5(y+2)$

$2y-5=5y+10$

$-3y=15$

$y=-5$

12. $V=\frac{1}{2}h(B+b)$ for b

$\frac{2V}{h}=B+b$

$\frac{2V}{h}-B=b$

$b=\frac{2V}{h}-B$

A doughnut shop has a fixed cost of \$124 per day and a variable cost of \$0.12 per doughnut.

13. Write the expression the total daily cost of producing x doughnuts. $C(x)=124+0.12x$

14. How many doughnuts can be produced for a total daily cost of \$250.

$250=124+0.12x$

$126=0.12x$

$x=\frac{126}{0.12}$

$=\frac{126}{\frac{12}{100}}$

$x=\frac{126(100)}{12}$

$=1050$