

Math 80
Exam 2
March 2, 2007

Name: _____

1. Your exam contains 5 questions and 5 pages; Please make sure you have a complete exam.
2. The entire exam is worth 100 points. Point values for problems vary and these are clearly indicated. You have 50 minutes for this exam.
3. Make sure to **ALWAYS SHOW YOUR WORK**; you will not receive any partial credit unless all work is clearly shown. If in doubt, ask for clarification.
4. If you need extra space, use the back page of the exam and clearly indicate this.
5. You are allowed one 8.5×11 sheet of handwritten notes (both sides).
6. Leave answers in exact form (as simplified as possible) or round to 4 decimal places.

Problem	Total Points	Score
1	15	
2	25	
3	10	
4	25	
5	25	
Total	100	

1. (15 pts.) Find an equation for a line through $(-3, 1)$ that is perpendicular to the line $2y = -6x + 8$. Write the equation in slope-intercept form.

2. (10 pts.) The mass of one water molecule is approximately 3×10^{-23} grams. What is the mass of 2×10^{25} water molecules? (Use scientific notation in your calculations.)

3. (25 pts.) Simplify the following exponential expressions as much as possible. Write answers with positive exponents only.

(a) (8 pts.) $\frac{4^{-2}}{2^{-3}} \cdot (-3^0)$

(b) (8 pts.) $(ab^2)^4 \cdot (2a^6bc)$

(c) (9 pts.) $\frac{(3x^{-3}y^2)^{-2}}{x^5y^{-5}}$

4. (25 pts.) Carry out the following operations and simplify as much as possible.

(a) (8 pts.) Subtract $-2a^7 + a^4 - 3$ from the polynomial $5a^7 - 3a^4 + a$.

(b) (9 pts.) $3(m + 1)(n^2m - n^2 + 2)$

(c) (8 pts.) Divide $3y^5z^2 - 6y^3z + 3y^2z^2$ by the monomial $-3y^2z^2$.

5. (25 pts.) Factor the following polynomials **as much as possible**.

(a) (8 pts.) $st - 2s + 5t^2 - 10t$ (Factor by grouping)

(b) (8 pts.) $a^2 - 3a - 40$

(c) (9 pts.) $2x^4y + 18x^3y - 20x^2y$