

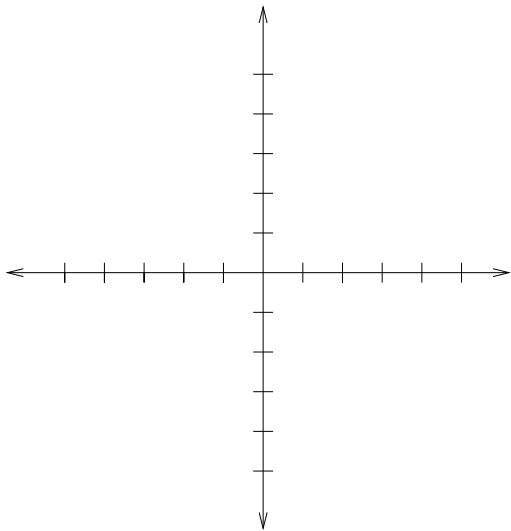
**Math 80**  
**Midterm 2**  
**May 25, 2006**

Name: \_\_\_\_\_

1. Your exam contains 5 questions and 5 pages; Please make sure you have a complete exam.
2. The entire exam is worth 75 points. Point values for problems vary and these are clearly indicated. You have 65 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  $8.5 \times 11$  sheet of handwritten notes (both sides). Graphing and scientific calculators are allowed.
6. Leave answers in exact form (as simplified as possible) or round to 4 decimal places.

Problem	Total Points	Score
1	10	
2	10	
3	25	
4	15	
5	15	
Total	75	

1. (10 pts.) Find an equation for the line through  $(2, -1)$  with slope  $\frac{1}{2}$ . Write the equation in slope-intercept form and graph on the axis below.



2. (10 pts.) The average distance from Mars to the sun is  $2.3 \times 10^8$  kilometers. The speed of light is approximately  $3.0 \times 10^5$  kilometers per second. How long in seconds does it take for sun light to reach Mars' surface? Make sure to do your calculations using scientific notation.

3. (25 pts.) Carry out the following operations:

(a) (5 pts.)  $(-2x^6 + 3x^4 - x^2) - (x^6 + 2x^4 + 3x^2)$

(b) (5 pts.)  $(3m + 5) \cdot (m - 2)$

(c) (8 pts.)  $y \cdot (x - 1) \cdot (2xy^2 - 3x + y^4)$

(d) (7 pts.)  $\frac{2x^3y + 6x^2y^3 - 2x}{2x}$

4. (15 pts.) Simplify the following exponential expressions as much as possible. Write answers with only positive exponents.

(a) (5 pts.)  $\left(-\frac{1}{2}\right)^{-4}$

(b) (5 pts.)  $(5x^3y^2z)^3 \cdot (yz^2)^4$

(c) (5 pts.)  $\frac{(m^{-6}n)^{-2}}{m^{-1}n} + m^2n$

5. (15 pts.) Factor the following polynomials as much as possible.

(a) (5 pts.)  $2x^2 + 6x - 8$

(b) (5 pts.)  $12a^2b + 4a^3b^2 - 8a^3b^2$

(c) (5 pts.)  $6m^2 + mn - 24m - 4n$  (Factor by grouping.)