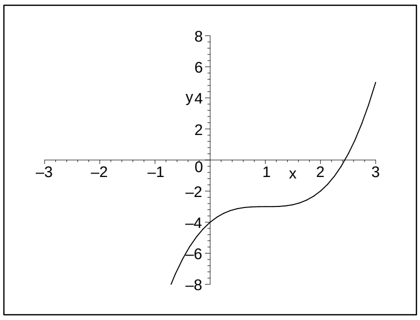
Math 111, Intro to Mathematical Methods **05 May 2005**
Exam 3 **Crawford**
Name: _____

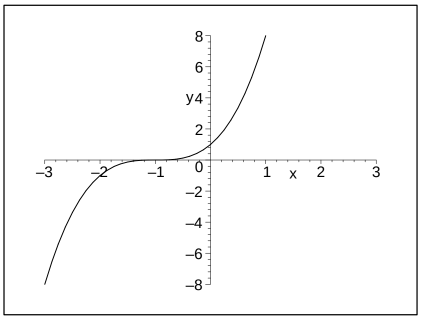
- No books or notes allowed.
- No calculators allowed on Part A. You must completely finish Part A and turn it in before you may use a calculator on Part B
- Clearly indicate your answers.
- ***Show all your work*** – partial credit may be given for written work.
- Good Luck!

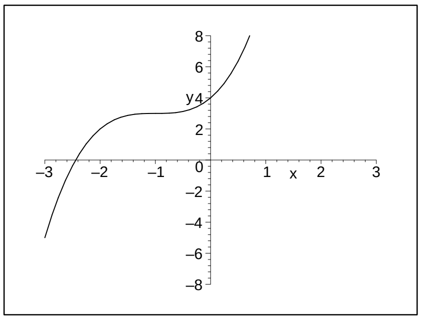
	Score
1	/2
2	/5
3	/18
4	/10
5	/24
6	/8
7	/10
8	/18
9	/4
10	/3
11	/3
Total	/100

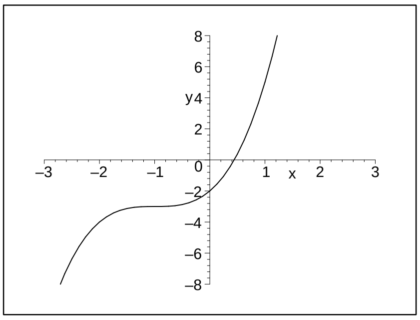
<u>Part A</u> No calculators on Part A. You must completely finish Part A and turn it in before you work on Part B.

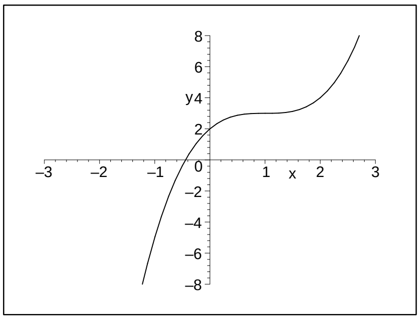
1. (2 pts). Which of the following graphs is a graph of $y = (x-1)^3 + 3$

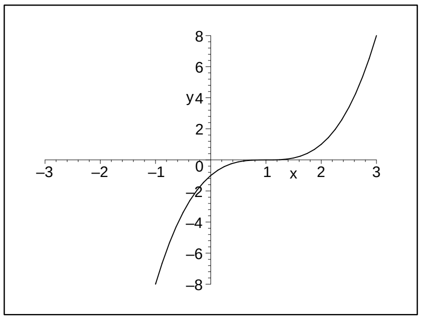












2. (5 pts). Given the function $y = 2^{-x}$, complete the table of values and then graph the function. Clearly label 2 points.

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

Part B You must completely finish Part A and turn it in before you may use a calculator on Part B. Show all your work in a clear and organized fashion. Clearly indicate your answers.

3. (18 pts). Solve the following equation using the method indicated. Simplify your answers and leave them in exact form (i.e. no decimals). If no solution exists, clearly state so.

(a). quadratic formula: $4x^2 - 20x + 25 = 0$

(b). factoring: $4x^2 + 12 = 3x^2 + 7x$

(c). your choice of method: $3x^2 + 5x = 2$

4. (10 pts). The height of a ball thrown upward is given by $H = 36t - 16t^2$, where t is the time in seconds and H is the height given in feet.

(a). How high is the ball after 1.5 seconds?

(b). At what time t will the ball reach a height of 14 feet?

(c). At what time t will the ball reach its maximum height?

(d). What is the maximum height?

5. (24 pts). Solve the following inequalities. Graph the solution on the number line.

(a). $4(2x-3) > 2x+6$

(b). $|5-3x| > 2$

(c). $x^2 - 3x + 18 \leq 0$

6. (8 pts). Graph and shade the solution region for $2x - 3y > 6(4 - x)$

7. (10 pts). Given the linear programming problem: Minimize $C = 2x + y$ subject to $\begin{cases} 4x + 3y \geq 24 \\ 2x - y \leq 12 \\ y \leq 4 \end{cases}$

(a). Shade the feasible region

(b). Find the corners

(c). Minimize the function as directed.

8. (18 pts). Solve for x:

(a). $5^{3x-2} = 5^{4-x}$

(b). $e^{x^2-x} = 1$

(c). $27^{2x} = 3^{4x}$

9. (4 pts).

(a). Write in exponential form: $\log_2 16 = 4$

(b). Write in logarithmic form: $125^{1/3} = 5$

10. (3 pts). Evaluate: $\log_3 27$

11. (3 pts). Find the value of x: $\log_x \frac{1}{3} = \frac{-1}{2}$