

Part I : Free Response, No Calculators, 45 minutes

Name (please print): \_\_\_\_\_ Date: \_\_\_\_\_

Please clearly show each step of your work in the space provided. You will be graded mainly on your methods. Questions #1-5 are worth 2 points each, questions #6-#20 are worth 4 points each. Simplify all answers as much as possible.

1) Simplify:  $-5^2 - (-3)^2$  1) \_\_\_\_\_

2) Divide:  $6.8 \div 0.02$  2) \_\_\_\_\_

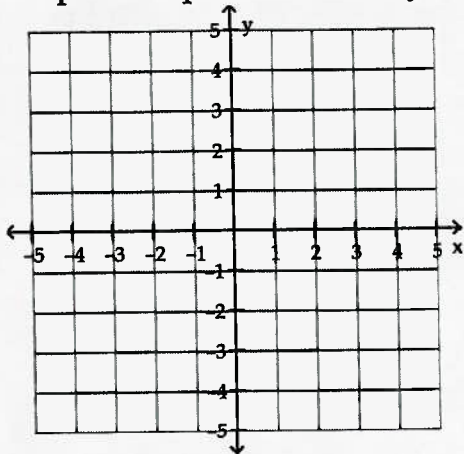
3) Subtract:  $\frac{4}{7} - \frac{5}{3}$  3) \_\_\_\_\_

4) Divide:  $\frac{5}{9} \div \frac{4}{3}$  4) \_\_\_\_\_

5) Simplify:  $\sqrt{80}$  5) \_\_\_\_\_

6) Evaluate the expression  $[13 - (4 - x)^2] \div 9 \cdot 2$  when  $x = -3$ . 6) \_\_\_\_\_

7) Graph the equation:  $3x - 5y = 15$  7) \_\_\_\_\_



8) Simplify:  $-4(9x + 5) - 7(3 - x)$  8) \_\_\_\_\_

9) Simplify:  $\frac{x^2 - x - 6}{x} \cdot \frac{x^2}{x - 3}$  9) \_\_\_\_\_

10) Solve the proportion:  $\frac{2}{9} = \frac{6}{4 - m}$  10) \_\_\_\_\_

11) Solve for x:  $3\sqrt{x + 8} - 7 = 26$  11) \_\_\_\_\_

12) Use the quadratic formula,  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ , to solve the

12) \_\_\_\_\_

equation:  $10x^2 - x - 2 = 0$  Simplify your answers as  
much as possible.

13) Solve the system of equations:

13) \_\_\_\_\_

$$5x - 4y = -13$$

$$2x + 3y = 4$$

14) Seven times the sum of 6 and a number equals forty-nine.  
Write the equation and solve.

14) \_\_\_\_\_

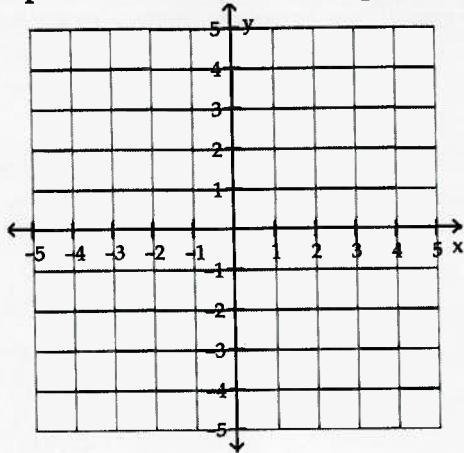
15) Write an equation in slope-intercept form,  $y = mx + b$ , of the  
line that passes through the points  $(-6, -2)$  and  $(1, -5)$ .

15) \_\_\_\_\_

16) Simplify:  $\frac{(3x^4y)^2}{x^5y^{-3}}$  There should not be negative exponents  
in your answer.

16) \_\_\_\_\_

17) Graph the equation  $y = -x^2 - 2x + 3$ . Clearly indicate the vertex and the y-intercept of the graph. Be sure to graph enough points to show the complete shape of the graph.



17) \_\_\_\_\_

18) Solve by factoring:  $x^2 + 8x - 20 = 0$

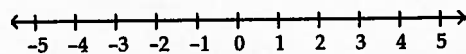
18) \_\_\_\_\_

19) Solve for x:  $|2x - 5| = 12$

19) \_\_\_\_\_

20) Solve the inequality and plot the solution on the number line below:  $-3 \leq 3 - 2x \leq 11$

20) \_\_\_\_\_

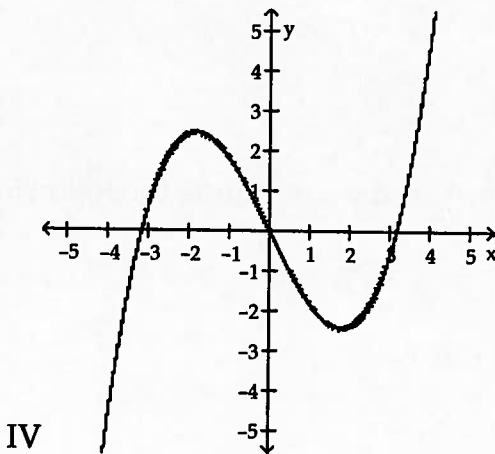
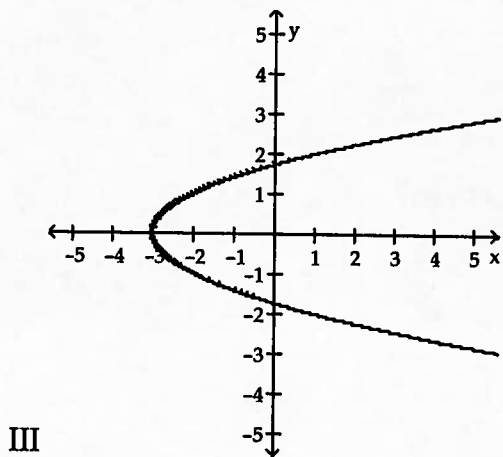
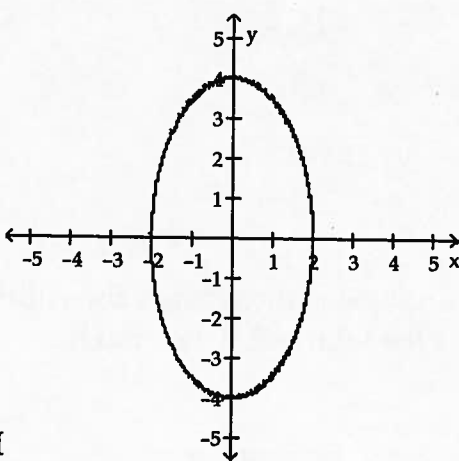
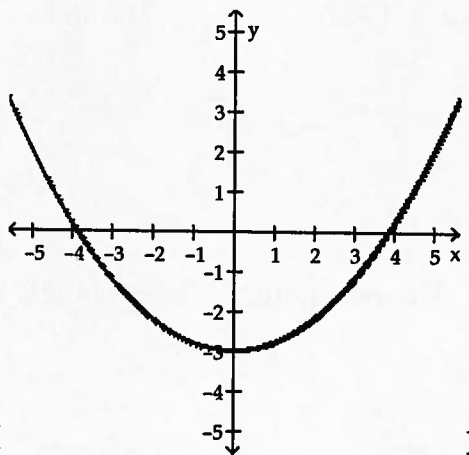


Part II: Multiple Choice, Calculators Permitted, 35 minutes

Name (please print): \_\_\_\_\_ Date: \_\_\_\_\_  
First Name Last Name

Use any methods you like to solve the following problems. Use the Scantron form to bubble in your answers. You are allowed to write on this test but only the Scantron answers will be graded. Each question is worth 2 points.

1) Which of the following graphs represent a function?



A) I only

B) II and III

C) I and IV

D) I, III and IV

2) You and your friend go to a Mexican restaurant. You order 2 tacos and 2 enchiladas. Your friend orders three tacos and one enchilada. Your bill comes to \$4.80 and your friend's bill comes to \$4.00. What is the cost of one taco?

A) \$0.80

B) \$1.20

C) \$1.40

D) \$1.60

3) Solve  $x^3 - 4x = 0$

A) 0 and 2

B) 0, 2, and -2

C) 2 and -2

D) 0 and -2

4) The length of a rectangle is three times the width. The perimeter of the rectangle is 40 centimeters. Find the width of the rectangle.

A) 4 cm

B) 5 cm

C) 8 cm

D) 10 cm

5) Which statement is true concerning the following lines?

Line  $p$ :  $-2x + 5y = 35$

Line  $q$ :  $5x + 2y = -6$

Line  $r$ :  $-5x + 2y = 1$

A) Line  $p$  and line  $q$  are parallel.

C) Line  $p$  and line  $r$  are parallel.

B) Line  $p$  and line  $r$  are perpendicular.

D) Line  $p$  and line  $q$  are perpendicular.

6) Find the product:  $(x - 1)(2x^2 + x + 1)$

A)  $2x^3 - 3x^2 - 1$

B)  $2x^3 - x^2 - 1$

C)  $2x^3 - x^2 - 2x - 1$

D)  $2x^3 + 3x^2 + 2x - 1$

7) The area of a trapezoid is given by the formula:  $A = \frac{1}{2}h(b_1 + b_2)$ .

Solve this formula for  $b_1$ .

A)  $b_1 = \frac{2A}{hb_2}$

B)  $b_1 = \frac{1}{2}Ahb_2$

C)  $b_1 = 2Ah - b_2$

D)  $b_1 = \frac{2A}{h} - b_2$

8) Simplify the expression:  $\frac{x^{-9}}{x^{-3}}$

A)  $\frac{1}{x^{-6}}$

B)  $\frac{1}{x^6}$

C)  $x^3$

D)  $x^{-3}$

9) Expand and simplify:  $(3x - 7)^2$

A)  $9x^2 + 49$

B)  $9x^2 - 49$

C)  $9x^2 + 42x - 49$

D)  $9x^2 - 42x + 49$

10) Given that  $\frac{6}{x} = \frac{y}{7}$ , which of the following is true?

A)  $y = \frac{42}{x}$

B)  $x = 42y$

C)  $xy = \frac{6}{7}$

D)  $\frac{x}{7} = \frac{y}{6}$

11) How many solutions does  $x^2 - 10x + 25 = 0$  have?

A) No solutions

B) One solution

C) Two solutions

D) Infinitely many solutions

12) An airplane flying at 32,000 feet begins to descend for landing at 500 feet per minute. Which of the following equations models the height of the airplane,  $h$ , as a function of time,  $t$ , after its descent began?

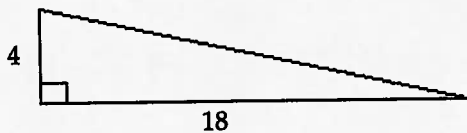
A)  $h = 500t + 32,000$

B)  $h = 500t - 32,000$

C)  $h = -500t + 32,000$

D)  $h = -500t - 32,000$

13) Find the perimeter of the right triangle.



A) 18.44

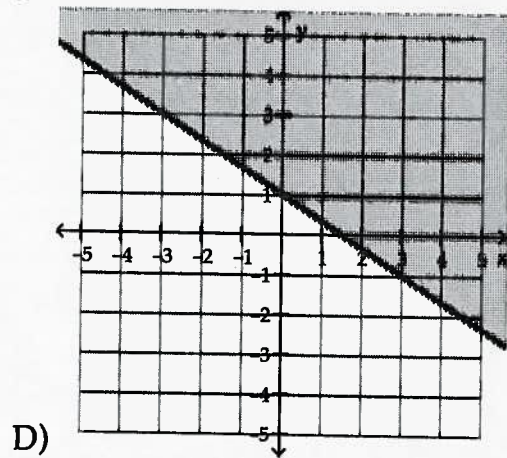
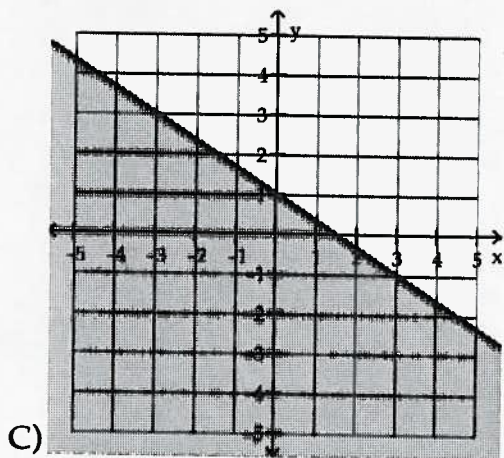
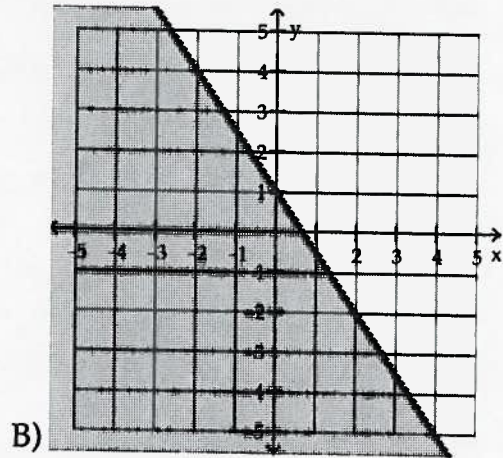
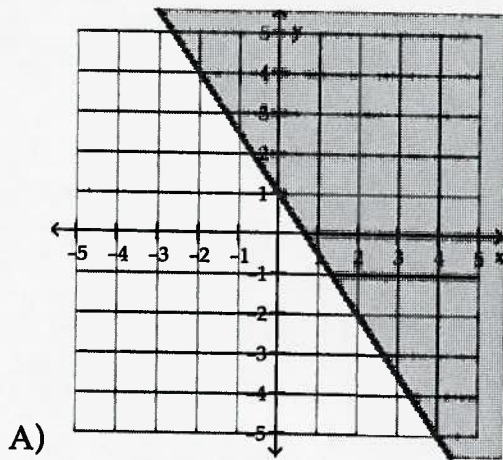
B) 36

C) 40.44

D) 42



14) Which graph represents the solution to  $y \geq -\frac{2}{3}x + 1$ ?



15) You can pack 108 boxes in 45 minutes. At this rate, how many boxes can you pack in 2 hours?

A) 144

B) 196

C) 216

D) 288

