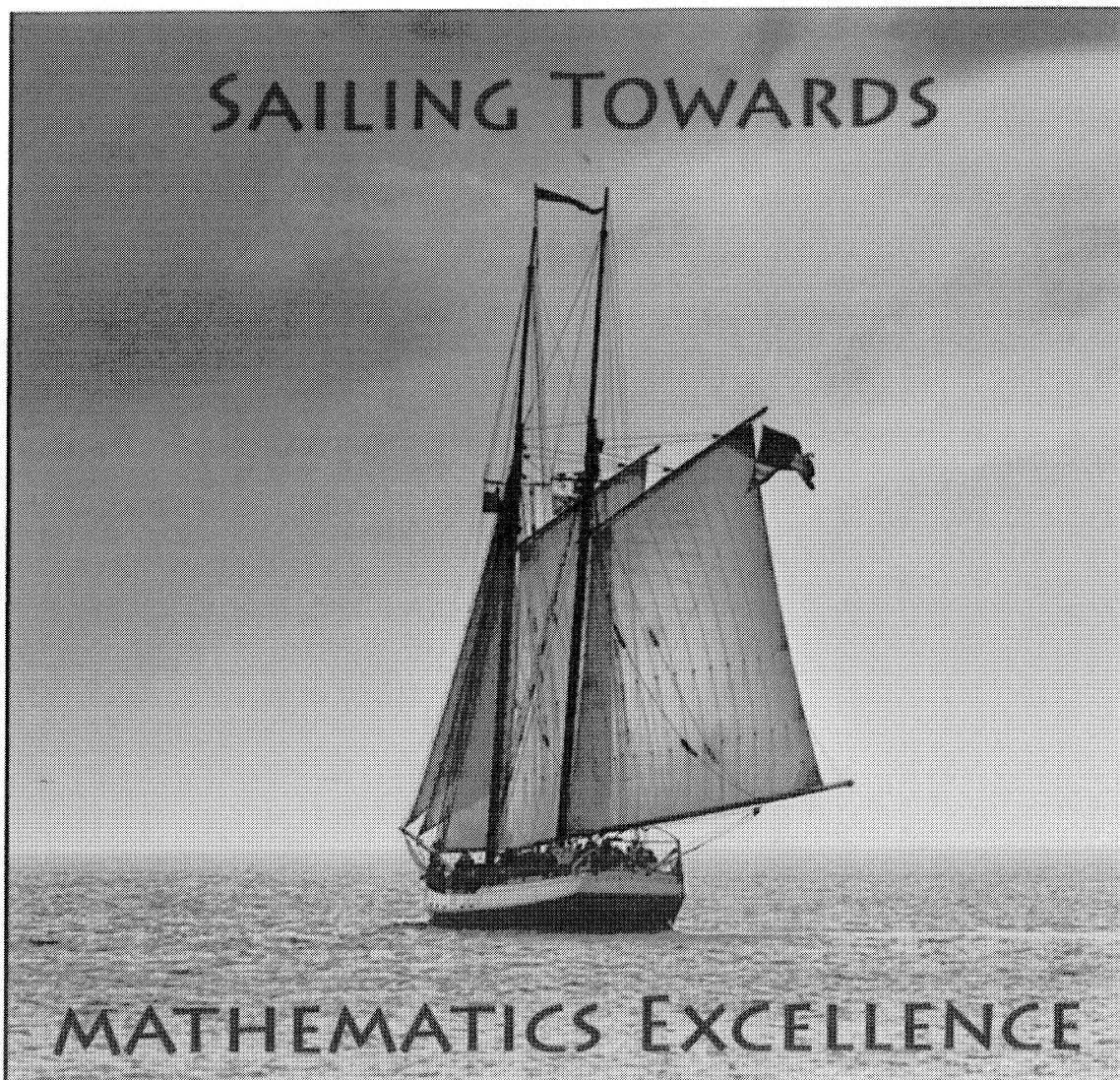


BROWNSVILLE CITY MATH MEET  
SIMON RIVERA HIGH SCHOOL

APRIL 25, 2007



ALGEBRA I (HIGH SCHOOL)

NAME \_\_\_\_\_

SCHOOL \_\_\_\_\_

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## ALGEBRA I TEST

1. Solve the system  $x = (y - 2)^2$  and  $x - 6y = -12$  for  $x$ .

- A. 2, 8
- B. 0, 2
- C. 8, 36
- D. 0, 36

2. Given the circle  $(x + 5)^2 + (y - 3)^2 = 49$ , find the center and radius.

- A.  $(-5, 3)$ ;  $r = 7$
- B.  $(5, -3)$ ;  $r = 7$
- C.  $(-5, -3)$ ;  $r = 7$
- D.  $(5, 3)$ ;  $r = 7$

3. Given  $f(x) = x^2 + 2x - 4$  and  $g(x) = 4x^2 - 7x - 10$  find  $(f \circ g)(3)$  is

- A. 5
- B. 50
- C. 31
- D. 10

4. Evaluate the determinant  $\begin{vmatrix} -7 & -3 \\ 4 & 2 \end{vmatrix}$

- A. -26
- B. -2
- C. 8
- D. 20

5. Evaluate  $\frac{7 + 5(-2) + 6}{3(8 - 5)}$ .

- A.  $\frac{1}{5}$
- B.  $\frac{1}{3}$
- C.  $\frac{2}{3}$
- D.  $\frac{3}{4}$

6. List all the whole numbers of B given  $B = \left\{ 5, -8, \sqrt{9}, 0, 8.3, \frac{2}{5}, 2, -\frac{3}{7}, \sqrt{10} \right\}$

- A.  $5, -8, \sqrt{9}, 0, 2$
- B.  $8.3, \frac{2}{5}, -\frac{3}{7}, \sqrt{10}$
- C.  $5, \sqrt{9}, 0, 2$
- D.  $5, \sqrt{9}, 2$

7. Write a numerical expression for 14 less than three times the sum of a number and 7 then simplify.

- A.  $3(x + 7) - 14 ; 3x + 7$
- B.  $14 - 3(x + 7) ; -7 - 3x$
- C.  $3x + 7 - 14 ; 3x - 7$
- D.  $14 - 3x + 7 ; 21 - 3x$

8. Simplify:  $-4(2y - 3) - (5y + 7) + 3y + 14$ .

- A.  $8y - 15$
- B.  $-10y + 19$
- C.  $8y + 19$
- D.  $-10y - 15$

9. Solve:  $1.4r - 3.1 + 2r - 4.3 = -0.3r + 8.2 - 1.5r$

- A.  $-1$
- B.  $2$
- C.  $3$
- D.  $-4$

10. Solve:  $\frac{2}{3}x - \left(x - \frac{2}{5}\right) = -\frac{1}{5}(x + 2)$

- A.  $6$
- B.  $-4$
- C.  $-2$
- D.  $8$

11. If 9 is added to the largest of three consecutive odd integers the result is thirty-six less than the sum of the two smaller integers. Find the largest integer.

- A.  $63$
- B.  $39$
- C.  $51$
- D.  $45$

12. If the  $m\angle A$  is  $(5x - 15)^\circ$  and the  $m\angle B$  is  $(2x - 8)^\circ$ , find the measure of angle A if the angles are supplementary.

- A.  $120^\circ$
- B.  $85^\circ$
- C.  $70^\circ$
- D.  $130^\circ$

13. Solve:  $\frac{4}{3}(x-2) + \frac{1}{2}(4-2x) > x+4$ . Write the answer in interval notation.

- A.  $(-\infty, -7)$
- B.  $(-\infty, 7]$
- C.  $(-7, \infty)$
- D.  $[-7, \infty)$

14. Find the slope of a line perpendicular to the line passing through  $(7, -3)$  and  $(-8, 3)$ .

- A.  $-\frac{2}{5}$
- B.  $-\frac{5}{2}$
- C.  $\frac{2}{5}$
- D.  $\frac{5}{2}$

15. Find the equation of the line that is parallel to  $5x - 2y + 7 = 0$  and passes through the point  $(-1, 4)$ .

- A.  $2x + 5y = 18$
- B.  $5x - 2y = -13$
- C.  $2x - 5y = -22$
- D.  $5x + 2y = 3$

16. Which equation has a  $y$ -intercept of 7?

- A.  $3x + 2y + 14 = 0$
- B.  $2x + 3y - 21 = 0$
- C.  $y + 7 = 0$
- D.  $3x - 4y = 28$

17. Simplify  $\left(\frac{r^2 s^{-1} t}{r^3 s t^2}\right)^3 \left(\frac{r^{-2} t^{-3}}{r^{-1} s^2 t^{-2}}\right)^{-4}$

- A.  $s^5 t^2$
- B.  $r s^2 t^3$
- C.  $r s^2 t$
- D.  $r^4 s^3 t^4$

18. Subtract the sum of  $5a^3 - 3a^2 + 2a$  and  $8a^2 - 6a - 5$  from the sum of  $3a^3 - 7a^2 + 3$  and  $4a^3 - 6a - 2$ .

- A.  $2a^3 - 12a^2 + 9a + 6$
- B.  $-2a^3 + 11a^2 + 9a + 8$
- C.  $2a^3 - 12a^2 - 2a + 6$
- D.  $-2a^3 + 12a^2 - 2a - 6$

19. Simplify  $7c^3(3c-5)(2c+3)$

- A.  $42c^5 + 6c^4 + 105c^3$
- B.  $42c^5 + 14c^4 - 56c^3$
- C.  $42c^5 - 8c^4 - 32c^3$
- D.  $42c^5 - 7c^4 - 105c^3$

20. What is the remainder for  $(27x^3 - 33x^2 - 5x + 12) \div (3x - 2)$ ?

- A. -5
- B. -4
- C. 6
- D. 2

21. Which of the following is a factor of  $8x^4 - 14x^3 - 15x^2$ ?

- A.  $4x + 3$
- B.  $2x + 5$
- C.  $2x - 3$
- D.  $4x - 1$

22. Which of the following is a factor of  $15m^5 - 31m^4n - 24m^3n^2$ ?

- A.  $5m + 6n$
- B.  $3m - 8n$
- C.  $5m - 2n$
- D.  $3m + 2n$

23. The product of the roots for  $2k^2 - k + 6 = 3(k^2 + 2k - 4)$  is

- A. -18
- B. 28
- C. -6
- D. 10

24. Write  $\frac{y^2 - 9y - 70}{y^2 - 2y - 35}$  in lowest terms.

- A.  $\frac{y-2}{y-1}$
- B.  $\frac{y+2}{y+5}$
- C.  $\frac{y-8}{y-2}$
- D.  $\frac{y-14}{y-7}$

25. Perform the indicated operation:  $\frac{a^2 + 9a + 18}{a^2 + 3a - 28} \div \frac{3a^2 + 11a + 6}{3a^2 + 23a + 14}$

- A.  $\frac{a+3}{a+7}$   
 B.  $\frac{a+6}{a-4}$   
 C.  $\frac{a+7}{3a+2}$   
 D.  $\frac{3a+2}{a+3}$

26. Perform the indicated operation:  $\frac{10y^2 + 7y - 12}{25y^2 - 16} * \frac{10y^2 - 7y - 12}{4y^2 + 12y + 9}$

- A.  $\frac{2y-3}{2y+3}$   
 B.  $\frac{5y-4}{2y+3}$   
 C.  $\frac{2y+3}{5y+4}$   
 D.  $\frac{2y-3}{5y-4}$

27. Simplify:  $\frac{4r}{6r^2 + 5r - 4} - \frac{3r}{4r^2 - 8r + 3} + \frac{r-3}{6r^2 - r - 12}$

- A.  $\frac{r^2 - 12r + 5}{(2r-1)(3r+4)(2r-3)}$   
 B.  $\frac{r^2 + 12r + 5}{(2r-1)(3r+4)(2r-3)}$   
 C.  $\frac{r^2 + 12r + 3}{(2r-1)(3r+4)(2r-3)}$   
 D.  $\frac{r^2 - 31r + 3}{(2r-1)(3r+4)(2r-3)}$

28. A cold water faucet can fill a sink in 12 min. and a hot water faucet can fill it in 18 min. The drain can empty the sink in 24 min. If both faucets are on and the drain is open, how long will it take to fill the sink?

- A. 10.3 min  
 B. 12.5 min  
 C. 14.4 min  
 D. 16.2 min

29. Solve:  $\frac{x+2}{x^2+2x-3} + \frac{x-5}{x^2+5x+6} = \frac{2x-1}{x^2+x-2}$

- A.  $\frac{5}{12}$
- B.  $\frac{12}{7}$
- C.  $-\frac{3}{4}$
- D.  $-\frac{2}{3}$

30. Simplify:  $\frac{\frac{-5}{x+2} + 2}{\frac{5}{x+2} - 2}$

- A. 1
- B. -3
- C. -1
- D. 3

31. Find the slope of the line passing through the points  $(-9, 2)$  and  $(3, -8)$ .

- A.  $-\frac{5}{6}$
- B.  $-\frac{6}{5}$
- C.  $-\frac{5}{2}$
- D.  $\frac{2}{5}$

32. Find the slope of the line which is perpendicular to the line  $8x + 5y + 7 = 0$ .

- A.  $-\frac{5}{8}$
- B.  $\frac{8}{5}$
- C.  $-\frac{8}{5}$
- D.  $\frac{5}{8}$

33. The collision impact of an automobile varies jointly as its mass and the square of its speed. Suppose a 2600-lb car traveling 60 mph has a collision impact of 7.2. What is the collision impact of the same car at 50 mph?

- A. 5
- B. 4
- C. 7
- D. 6

34. Solve the system of equations for  $x$ :  $3x + y = -2$  and  $4x + 3y = 9$ .

- A. 7
- B. -3
- C. -2
- D. 5

35. Solve the system of equations for  $y$ .

$$\begin{aligned}2x + 3y + 2z &= -3 \\3x - y - 4z &= -5 \\5x + 2y + 3z &= 12\end{aligned}$$

- A. 2
- B. 4
- C. -5
- D. -2

36. The bill for four cappuccinos and two house lattes was \$11.40. A second order for one cappuccino and five house lattes was \$12.30. What was the difference in cost between a cappuccino and a house latte?

- A. 45 cents
- B. 25 cents
- C. 40 cents
- D. 30 cents

37. Give the solution set of the compound inequality in interval notation.  $2x + 5 > 4x - 7$  and  $6x + 2 \geq 3x - 4$

- A.  $(-2, 6)$
- B.  $(4, 8]$
- C.  $[-2, 6)$
- D.  $[4, 8)$

38. Express in simplest interval notation:  $[-8, 5) \cap (-3, 7)$

- A.  $(-3, 5]$
- B.  $[-3, 5]$
- C.  $[-3, 5)$
- D.  $(-3, 5)$

39. Solve the inequality:  $|-3x + 7| > 11$

- A.  $\left\{x \mid x < \frac{-4}{3} \text{ or } x > 6\right\}$
- B.  $\left\{x \mid -6 < x < \frac{4}{3}\right\}$
- C.  $\left\{x \mid \frac{-4}{3} < x < 6\right\}$
- D.  $\left\{x \mid x < -6 \text{ or } x > \frac{4}{3}\right\}$

40. Express in simplified form:  $\sqrt[6]{128x^{14}y^{10}}$

- A.  $2xy\sqrt[6]{2x^2y^4}$
- B.  $2x^2y\sqrt[6]{2x^2y^4}$
- C.  $2x^4y^2\sqrt[6]{2xy^2}$
- D.  $2x^2y^4\sqrt[6]{2x^2y^4}$

41. If  $\sqrt{2x + 19} = x + 2$  then what would be the value of  $4x$ ?

- A. 12
- B. 3
- C. -12
- D. -3

42. Simplify  $(2\sqrt{12} - 5\sqrt{3})^2$

- A. 2
- B. 7
- C. 3
- D. 4

43. Solve  $(x - 4)^2 = 27$

- A.  $\{4 \pm 3\sqrt{3}\}$
- B.  $\{4 \pm 2\sqrt{3}\}$
- C.  $\{-4 \pm 3\sqrt{3}\}$
- D.  $\{-4 \pm 2\sqrt{3}\}$

44. Solve  $4x^2 - 5x = -6$

- A.  $\left\{-\frac{5}{8} \pm \frac{\sqrt{71}}{8}i\right\}$
- B.  $\left\{\frac{5}{8} \pm \frac{\sqrt{61}}{8}i\right\}$
- C.  $\left\{-\frac{5}{8} \pm \frac{\sqrt{61}}{8}i\right\}$
- D.  $\left\{\frac{5}{8} \pm \frac{\sqrt{71}}{8}i\right\}$

45. If  $10x^2 - 21 = -29x$ , then what would be the value of  $2x$ ?

- A.  $-\frac{6}{5}, 7$
- B.  $-7, \frac{5}{6}$
- C.  $-\frac{5}{6}, 7$
- D.  $-7, \frac{6}{5}$

46. Solve  $\frac{y+6}{y-3} \geq 4$  and give the solution in interval notation form.

- A.  $(3, 6]$
- B.  $[3, 6]$
- C.  $[3, 6)$
- D.  $(3, 6)$

47. Solve  $8y^2 - 14y > 15$  and give the solution in interval notation form.

- A.  $(-\infty, \frac{-5}{2}] \cup [\frac{3}{4}, \infty)$
- B.  $(-\infty, \frac{-3}{4}] \cup [\frac{5}{2}, \infty)$
- C.  $(-\infty, \frac{-3}{4}) \cup (\frac{5}{2}, \infty)$
- D.  $[\frac{-3}{4}, \frac{5}{2}]$

48. Solve  $7^{4x} = 39$  to three decimal places for  $x$ .

- A. 0.524
- B. 1.143
- C. 0.471
- D. 0.612

49. Solve  $\log_5(10t + 39) + \log_5 t = \log_5 27$

- A.  $\frac{5}{2}$
- B.  $\frac{3}{5}$
- C.  $\frac{1}{5}$
- D.  $\frac{5}{3}$

50. Identify the conic and its center represented by the equation  $\frac{(y-3)^2}{36} - \frac{(x+4)^2}{49} = 1$

- A. Ellipse;  $(-4, 3)$
- B. Hyperbola;  $(3, -4)$
- C. Ellipse;  $(3, -4)$
- D. Hyperbola;  $(-4, 3)$

