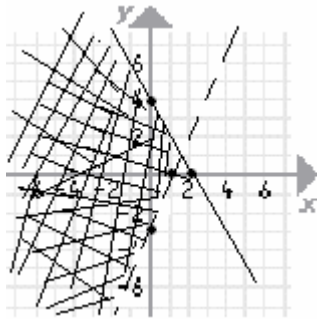


Review for 0099 Final Exam (Revised Spring 2009)

- Solve using both the graphical and the substitution methods. $y = 2x - 2$
 $y = -3x + 13$
(a) No solution (b) an infinite number of solutions (c) (3, 4) (d) (-2, -6) (e) (4, 1)
- Use the substitution method to solve: $y = 0.6x - 10$
 $5y - 3x = 4$
(a) No solution (b) an infinite number of solutions (c) (10, -4) (d) (2, 2) (e) (5, -5)
- Use the elimination method to solve: $y = 2(4 + x)$
 $y = 8 + 2x$
(a) No solution (b) an infinite number of solutions (c) (0, -8) (d) (0, 8) (e) (5, 2)
- Use the elimination method to solve: $6x = 5y + 10$
 $3x + 2y = 23$
(a) (4, 5) (b) (0, -2) (c) (3, 7) (d) (5, 4) (e) (7, 1)
- Use the elimination method to solve: $2x + 3y + 18 = 0$
 $9y = -6x - 12$
(a) No solution (b) an infinite number of solutions (c) (-3, -4) (d) (-5, 2) (e) (3, -8)
- If a plane can fly with the wind 3360 miles in 7 hours and make the return flight against the wind in 8 hours, what is the speed of the plane in calm air?
(a) 350 mph (b) 480 mph (c) 450 mph (d) 380 mph (e) 400 mph
- A paint store has a total of 75 one-gallon cans of paint, with the enamel selling for \$20.00 per gallon and the latex selling at \$30.00 per gallon. If the total value of the paint is \$1850.00, how many gallons of enamel are in stock?
(a) 40 cans (b) 30 cans (c) 25 cans (d) 50 cans (e) 28 cans
- A pharmacist needs 500 milliliters of a 20% Phenobarbital solution but has only 5% and 25% solutions in available. How many milliliters of each should he mix to get the desired solution? Write the answer for the number of milliliters of the 5% solution needed.
(a) 65 ml (b) 100 ml (c) 75 ml (d) 200 ml (e) 125 ml

9. The graph given represents which system of inequalities?

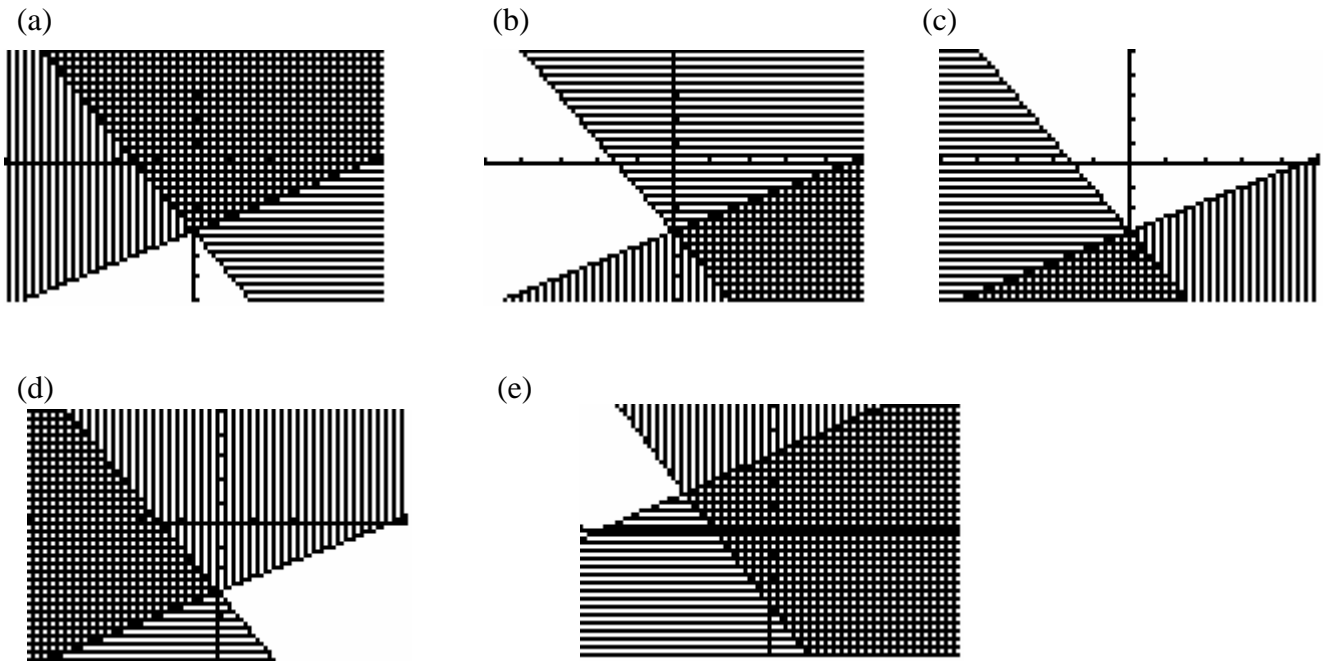


- (a) $y \leq -2x + 4$ (b) $y \geq -2x + 4$ (c) $y \leq -2x - 4$ (d) $y \geq 2x - 4$
 $y > 3x - 3$ $y < 3x - 3$ $y < -3x + 3$ $y > 3x + 3$
- (e) None of these

10. Which graph represents the solution set of the system of inequalities:

$$y \geq -2x - 3$$

$$2x - 3y \geq 9$$



11. When the polynomial $ax - 3a - bx + 3b$ is factored completely, **one** of the factors is :

- (a) $x + 3$ (b) $a - b$ (c) $a + b$ (d) $3 - x$ (e) none of these

12. When the polynomial $25x^3 - 25$ is factored completely, **one** of the factors is :

- (a) $x^2 + x + 1$ (b) $x + 1$ (c) $x^2 - 1$ (d) $x^2 - x + 1$ (e) none of these

13. When the polynomial $x^4 - 81$ is factored completely, **one** of the factors is :

- (a) $x + 3$ (b) $x^2 + 3$ (c) $x^2 - 9$ (d) $x - 9$ (e) none of these

14. When the polynomial $20x^2 - 60x + 45$ is factored completely, one of the factors is :

- (a) $2x + 3$ (b) $2x - 3$ (c) $10x - 15$ (d) $5x + 9$ (e) none of these

15. Simplify the rational expression $\frac{x^2 - 49}{7 - x}$.

- (a) cannot be simplified (b) $x + 7$ (c) $x - 7$ (d) $-x - 7$ (e) $-x + 7$

16. Simplify the rational expression $\frac{x^3 + 3x^2 - 9x - 27}{x^2 + 6x + 9}$.

- (a) $(x + 3)(x - 3)$ (b) $x - 3$ (c) $x + 3$ (d) $3 - x$ (e) $(x + 3)(x + 3)$

17. Perform the indicated operation and simplify: $\frac{x^3 - 27}{x^2 - 9} \div \frac{x^2 + 3x + 9}{x^2 + 8x + 15}$

- (a) $\frac{(x-3)(x-3)}{x^2 + 3x + 9}$ (b) $\frac{x+5}{x-3}$ (c) $\frac{(x+3)(x-3)}{x^2 + 3x + 9}$ (d) $x+5$ (e) none of these

18. Perform the indicated operation and simplify: $\frac{x}{x^2 + 4x + 3} - \frac{2}{x^2 - 2x - 3}$

- (a) $\frac{x^2 - 5x + 6}{(x+3)(x-3)(x+1)}$ (b) $\frac{(x-6)}{(x+3)(x-3)}$ (c) $\frac{(x-2)}{(x+3)(x+1)}$ (d) $\frac{(x-2)}{(x+3)(x-3)(x+1)}$
(e) None of these

19. Simplify the complex fraction: $\frac{\frac{2}{3} + \frac{4}{x}}{\frac{1}{x} + \frac{1}{2}}$

- (a) $\frac{28}{9}$ (b) $\frac{4x}{3}$ (c) $\frac{8}{3}$ (d) $\frac{4x+24}{6+3x}$ (e) None of these

20. Simplify the complex fraction: $\frac{a^{-1}b^{-1}}{a^{-1} + b^{-1}}$

- (a) $\frac{1}{a+b}$ (b) $\frac{1}{ab}$ (c) $\frac{1}{2}$ (d) $a + b$ (e) None of these

21. Solve the equation. $\frac{3}{x+3} = \frac{2}{x-4} - \frac{10}{x^2 - x - 12}$

- (a) $x = 2$ (b) $x = 6$ (c) $x = -5$ (d) $x = 8$ (e) None of these

22. Solve the equation. $\frac{x}{x-3} + \frac{2}{x} = \frac{3}{x-3}$

- (a) $x = 4$ (b) no solution (c) $x = -2$ (d) $x = 3$ or $x = -2$ (e) $x = 6$ or $x = 3$

23. Solve the equation for R: $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$

- (a) $R = R_1 + R_2$ (b) $R = \frac{1}{R_1} - \frac{1}{R_2}$ (c) $R = \frac{1}{R_1 + R_2}$ (d) $R = \frac{R_1 R_2}{R_1 + R_2}$ (e) None of these

24. Working together, two people can wash their car in 10 minutes. One of the two, working alone, can wash the car in 30 minutes. How long would it take the other person to do the job working alone?

- (a) 12 minutes (b) 18 minutes (c) 10 minutes (d) 15 minutes (e) None of these

25. Three times one number minus a second is 8, and the sum of the numbers is 12. Find the **smaller** number.

- (a) 3 (b) -4 (c) 5 (d) 2 (e) None of these

26. Y varies directly as X. If $Y = 28$ when $X = 2$, what is the value of Y when X is -3 ?

- (a) -14 (b) -84 (c) -56 (d) -42 (e) None of these

27. Y varies inversely as X. If $Y = 3$ when $X = 10$, what is the value of Y when X is 15 ?

- (a) $9/2$ (b) 50 (c) 5 (d) 2 (e) None of these

28. In a particular electrical circuit, the current I is inversely proportional to the resistance R. If the current is 40 amperes what the resistance is 270 ohms, find the current when the resistance is 150 ohms.

- (a) 72 amps (b) 40800 amps (c) 6000 amps (d) $9/5$ amps (e) 125 amps

29. Evaluate $\sqrt[4]{-16}$

- (a) -4 (b) -2 (c) 2 (d) -4 (e) not a real number

30. Simplify the radical $-\sqrt[3]{x^{27}}$

- (a) x^3 (b) $-x^3$ (c) $-x^9$ (d) x^{-9} (e) None of these

31. Evaluate : $(-64)^{\frac{1}{3}}$

- (a) -8 (b) 8 (c) -4 (d) 4 (e) Not a real number

32. Evaluate: $\left(\frac{8}{27}\right)^{-\frac{2}{3}}$

- (a) $-2/3$ (b) $4/9$ (c) $-9/4$ (d) $9/4$ (e) Not a real number

33. Simplify: $\frac{(9x^4y^{-2})^{-\frac{1}{2}}}{(x^6y^{-3})^{\frac{1}{3}}}$

- (a) $\frac{3y^2}{x^4}$ (b) $\frac{x^4y^2}{3}$ (c) $\frac{-9}{2x^4}$ (d) $\frac{-9y^2}{2}$ (e) $\frac{y^2}{3x^4}$

34. Determine the indicated root: $\sqrt[4]{81x^{12}y^{20}}$

- (a) $9x^3y^5$ (b) $3x^3y^5$ (c) $9x^{48}y^{80}$ (d) $3x^{48}y^{80}$ (e) None of these

35. Simplify: $\sqrt[3]{-32x^7y^9}$

- (a) $-2\sqrt[3]{x^7y^9}$ (b) $-4\sqrt[3]{2x^7y^9}$ (c) $-2xy\sqrt[3]{x^2y^4}$ (d) $-4xy\sqrt[3]{2x^2y^4}$ (e) Not a real number

36. Multiply and simplify: $\sqrt[3]{9x^5y^{20}} \cdot \sqrt[3]{3x^3y^7}$

- (a) $9x^2y^3$ (b) $3x^2y^3$ (c) $3x^2y^9\sqrt[3]{x^2}$ (d) $9x^2y^9\sqrt[3]{x^2}$ (e) None of these

37. Rationalize the denominator/simplify: $\frac{\sqrt{18x^9y^{13}}}{\sqrt{2x^4y^{10}}}$

- (a) $3x^2y\sqrt{xy}$ (b) $4\sqrt{x^5y^3}$ (c) $3\sqrt{x^5y^3}$ (d) $4x^2y\sqrt{xy}$ (e) None of these

38. Rationalize the denominator/simplify: $\sqrt[3]{\frac{72x^{12}y^{10}}{3x^2y}}$

(a) $4x^2y^3\sqrt[3]{6y}$ (b) $2x^2y^3\sqrt[3]{3x}$ (c) $2\sqrt[3]{3x^5y^9}$ (d) $2x^3y^3\sqrt[3]{3x}$ (e) None of these

39. Rationalize the denominator/simplify: $\sqrt{\frac{x^5y^2}{20y^3}}$

(a) $\frac{x^2y\sqrt{5x}}{10y}$ (b) $\frac{x^2\sqrt{5xy}}{10y}$ (c) $\frac{x^2}{2}$ (d) $\frac{x^2y\sqrt{5x}}{10}$ (e) None of these

40. Perform the indicated operation and simplify: $4\sqrt{12} - 2\sqrt{27} + 5\sqrt{8}$

(a) $2\sqrt{3} + 10\sqrt{2}$ (b) cannot be simplified (c) $12\sqrt{5}$ (d) $7\sqrt{3} + 7\sqrt{2}$ (e) None of these

41. Perform the operation and simplify: $(\sqrt{7x} - \sqrt{3})(\sqrt{3} + \sqrt{7x})$

(a) $2\sqrt{21x} + 7x - 3$ (b) $\sqrt{42x} + 7x - 3$ (c) $7x - 3$ (d) 0 (e) None of these

42. Rationalize the denominator/simplify: $\frac{\sqrt{5} - \sqrt{3}}{\sqrt{5} + \sqrt{3}}$

(a) $\frac{8 - \sqrt{8}}{2}$ (b) $\frac{4 - \sqrt{15}}{2}$ (c) -1 (d) $4 - \sqrt{15}$ (e) None of these

43. Find the midpoint of the line segment whose endpoints are (6,-8) and (2,4).

(a) (8, -4) (b) (4, -2) (c) (3, -2) (d) (4, 6) (e) None of these

44. Find the distance between the two points: (2,3) and (14, 8).

(a) 27 units (b) $\sqrt{377}$ units (c) 13 units (d) $\sqrt{135}$ units (e) None of these

45. Solve the equation. $\sqrt{1-5x} + 5 = 1$

(a) $x = -3$ (b) $x = 1$ (c) $x = 4/5$ (d) $x = -1$ (e) no solution

46. Solve the equation. $\sqrt{x+3} = 1 + \sqrt{x-2}$

- (a) $x = 8$ (b) $x = 8$ or $x = 5$ (c) $x = 6$ (d) $x = 5$ (e) None of these

47. Perform the operation and simplify. $(2 - 3i)(3 - 4i)$

- (a) $18 - i$ (b) $-6 + i$ (c) $18 - 17i$ (d) $-6 - 17i$ (e) None of these

48. Perform the operation and simplify. $\frac{3-i}{1+2i}$

- (a) $-1 + 3i$ (b) $\frac{3-7i}{5}$ (c) $\frac{3-7i}{-3}$ (d) $\frac{1-7i}{3}$ (e) $\frac{1-7i}{5}$

49. Find the complex number solutions to the equation. $(2x + 5)^2 + 6 = 0$

- (a) $x = \frac{-5 \pm i\sqrt{6}}{2}$ (b) $x = \frac{-2 \pm i\sqrt{5}}{2}$ (c) $x = \frac{-2 \pm i\sqrt{5}}{2}$ (d) $x = \frac{-2 \pm i\sqrt{6}}{2}$
(e) None of these

50. If the completing the square method is used to solve the equation $4x^2 - 8x = -21$ the number which must be added to both sides to produce a perfect square trinomial on the left is what?

- (a) 16 (b) -16 (c) 4 (d) 1 (e) 5

51. Solve by completing the square: $x^2 + 6x + 2 = 0$

- (a) $-2 \pm \sqrt{5}$ (b) $-2 \pm \sqrt{7}$ (c) $-3 \pm \sqrt{7}$ (d) $-3 \pm \sqrt{5}$ (e) None of These

52. Use the quadratic formula to solve the equation. $4x^2 - 8x - 2 = 0$

- (a) $x = \frac{2 \pm \sqrt{2}}{2}$ (b) $x = 1 \pm \sqrt{2}$ (c) $x = \frac{2 \pm \sqrt{6}}{2}$ (d) $x = 1 \pm \sqrt{6}$
(e) None of these

53. Solve the quadratic inequality and write your answer in interval notation. $x^2 - 7x + 10 < 0$

- (a) $(-\infty, 2) \cup (5, \infty)$ (b) $(2, 5)$ (c) $(-\infty, 2] \cup [5, \infty)$ (d) $[2, 5$ (e) None of these

54. Working together, two roommates can paint their apartment in 10 hours. Working alone, one of them can complete the job in 15 hours less time than the other. How long would the faster person take, working alone?

- (a) 30 hours (b) 15 hours (c) 19 hours (d) 10 hours (e) None of these

55. Barbara drove 330 miles from her home to Tucson. On her return trip, she was able to increase her speed by 11 mph. If the return trip took 1 hour less time, find her original speed (to Tucson).

- (a) 50 mph (b) 67 mph (c) 48 mph (d) 55 mph (e) None of these

56. Solve the inequality algebraically using the test point method. $x^3 + 3x^2 - x - 3 > 0$

- (a) $(-\infty, -3) \cup (-1, 1)$ (b) $(-3, -1)$ (c) $(-\infty, -3) \cup (1, \infty)$ (d) $(-3, 1)$ (e) $(-3, -1) \cup (1, \infty)$

57. Solve the rational inequality using the test point method. $\frac{16x}{x+3} \leq 2x$

- (a) $(-3, 0] \cup [5, \infty)$ (b) $[-3, 5]$ (c) $[8, 5]$ (d) $(-3, 0) \cup (5, 8)$ (e) $(-3, 5) \cup (8, \infty)$

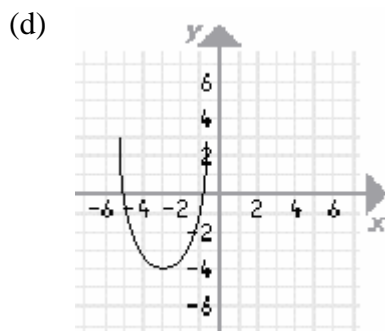
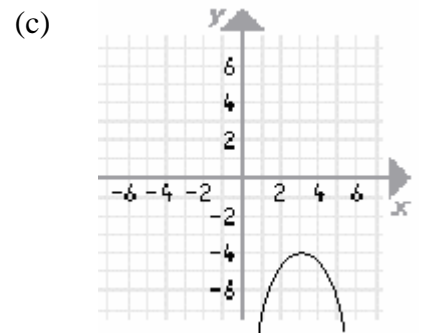
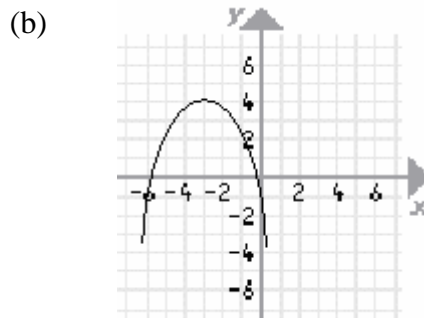
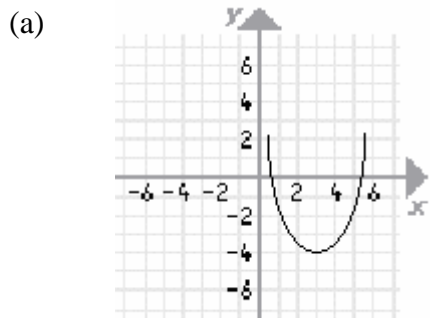
58. Solve the rational inequality using the test point method. $\frac{16x}{x+3} \geq 0$

- (a) $(-\infty, -3] \cup [0, \infty)$ (b) $(-\infty, -3] \cup (0, \infty)$ (c) $(-\infty, -3) \cup [0, \infty)$ (d) $(-\infty, -3) \cup (0, \infty)$
 (e) None of these

59. Determine the vertex and x-intercepts for the graph of $y = x^2 - 6x + 8$.

- (a) vertex $(-3, 35)$ (b) vertex $(3, -1)$ (c) vertex $(-3, 35)$ (d) vertex $(3, -1)$
 x-intercepts at : x-intercepts at : x-intercepts at : x-intercepts at :
 $(2, 0) (4, 0)$ $(2, 0) (4, 0)$ $(-2, 0) (-4, 0)$ $(-2, 0) (-4, 0)$
 (e) None of these

60. Choose the correct graph of the equation $y = (x-3)^2 - 4$



- (e) None of these

ANSWERS FOR 0099 FINAL EXAM REVIEW

1	C
2	A
3	B
4	D
5	A
6	C
7	A
8	E
9	A
10	B
11	B
12	A
13	A
14	B
15	D
16	B
17	D
18	B
19	D
20	A

21	D
22	C
23	D
24	D
25	C
26	D
27	D
28	A
29	E
30	C
31	C
32	D
33	E
34	B
35	C
36	C
37	A
38	D
39	B
40	A

41	C
42	D
43	B
44	C
45	E
46	C
47	D
48	E
49	A
50	D
51	C
52	C
53	B
54	B
55	D
56	E
57	A
58	C
59	B
60	A