FINAL EXAM REVIEW – MAT1033 (Intermediate Algebra)
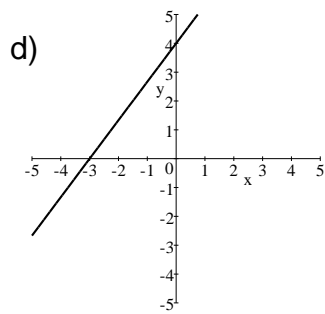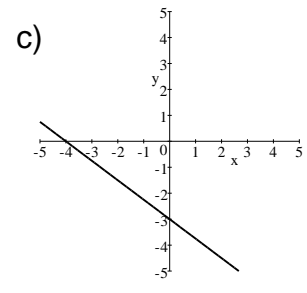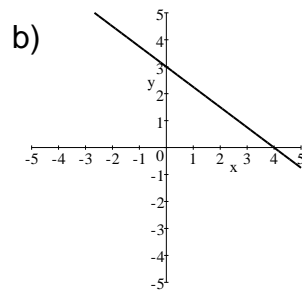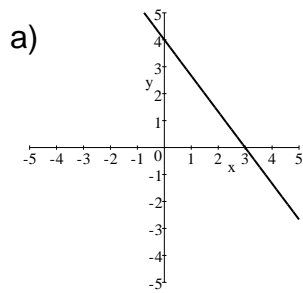
1. Factor completely: $3x^2 - 19x - 14$

    a) $(3x + 2)(x - 7)$ b) $(3x - 7)(x + 2)$ c) $(3x - 2)(x + 7)$

    d) $(3x + 7)(x - 2)$ e) None of these

2. Factor completely: $2rs + 3rst - 8r - 12rt$

    a) $r(2s + 3st - 8 - 12t)$ b) $(rs - 4r)(2 + 3t)$ c) $r(s - 4)(2 - 3t)$

    d) $r(s + 4)(2 - 3t)$ e) $r(s - 4)(2 + 3t)$

3. Factor completely: $2x^3 + 54$

    a) $2(x - 3)(x^2 + 3x - 9)$ b) $2(x^3 + 27)$

    c) $2(x + 3)(x + 3)(x + 3)$ d) $2(x + 3)(x^2 - 3x + 9)$ e) Not Factorable

4. Determine the values of x for which $\frac{x-4}{x^2-9}$ is undefined.

    a) 3   b) 3 and -3 c) 4, 3, and -3 d) 0 and 3   e) 0

5. Divide: $\frac{4x-16}{5x+15} \div \frac{4-x}{2x+6}$

    a) 3   b) $-\frac{4(x-4)}{5(x+3)^2}$ c) $-\frac{8}{5}$ d) $\frac{3}{10}$ e) -4

6. Add, then simplify: $\frac{2}{x^2-9} + \frac{5}{x^2-x-12}$

    a) $\frac{7}{(x^2-9)(x^2-x-12)}$ b) $\frac{7x^2-x-21}{(x^2-9)(x^2-x-12)}$ c) $\frac{7x-7}{(x^2-9)(x^2-x-12)}$

    d) $\frac{7x-7}{(x-3)(x-4)(x+3)}$ e) $\frac{7x-23}{(x-3)(x-4)(x+3)}$

7. Simplify the complex fraction: $\dfrac{3+\frac{7}{x}}{\frac{1}{xy}+\frac{2}{y}}$

a) $\dfrac{3xy+7}{1+2x}$

b) $\dfrac{3xy+7y}{1+2x}$

c) $\dfrac{3+7y}{xy+2}$

d) $\dfrac{3y+7}{1+2x}$

e) $\dfrac{3xy+7y}{xy+2}$

8. Solve for x: $\dfrac{4x+1}{4}-\dfrac{2x+3}{3}=\dfrac{7}{12}$

a) $\{4\}$

b) $\left\{-\dfrac{9}{2}\right\}$

c) $\{-2\}$

d) $\left\{\dfrac{3}{2}\right\}$

e) None of these

9. What is equivalent to: $27^{-2/3}$

a) $\sqrt[3]{27^2}$

b) $\dfrac{1}{\sqrt[3]{27^2}}$

c) $\dfrac{1}{\sqrt{27^3}}$

d) $\sqrt{27^3}$

e) $-\sqrt[3]{27^2}$

10. Find: $\sqrt{8}+\sqrt{18}$

a) $\sqrt{24}$

b) 10

c) $5\sqrt{2}$

d) $2\sqrt{6}$

e) None of these

11. Find: $\left(\sqrt{6}-2\right)\left(\sqrt{6}+2\right)$

a) 2

b) 4

c) 6

d) 8

e) None of these

12. Rationalize the denominator: $\dfrac{5}{8-\sqrt{3}}$

a) 1

b) $8+\sqrt{3}$

c) $\dfrac{5(8+\sqrt{3})}{61}$

d) $\dfrac{5(8-\sqrt{3})}{61}$

e) $8-\sqrt{3}$

13. Solve for x: $x^2-2x=8$

a) $\left\{1\pm i\sqrt{3}\right\}$

b) $\{-2,4\}$

c) $\left\{1\pm\sqrt{5}\right\}$

d) $\{2\}$

e) $\{8,10\}$

14. Solve for x: $2x^2 + 4x = 9x + 18$

a) $\left\{-2, \frac{9}{2}\right\}$ b) $\left\{2, -\frac{9}{2}\right\}$ c) $\left\{\frac{9}{2}\right\}$ d) $\left\{-\frac{9}{2}\right\}$ e) None of these

15. Solve for x: $8x^4 - 18x^3 - 5x^2 = 0$

a) $\left\{-\frac{1}{4}, \frac{5}{2}\right\}$ b) $\left\{\frac{1}{4}, -\frac{5}{2}\right\}$ c) $\left\{0, \frac{1}{4}, -\frac{5}{2}\right\}$ d) $\left\{0, -\frac{1}{4}, \frac{5}{2}\right\}$ e) $\{0\}$

16. Find the slope of the line determined by the points $(-3, 2)$ and $(5, -5)$

a) $-\frac{3}{4}$ b) $\frac{3}{4}$ c) $-\frac{5}{6}$ d) $-\frac{7}{2}$ e) $-\frac{7}{8}$

17. Find the slope of a line that is perpendicular to the line $4x + 3y = -6$

a) $\frac{3}{4}$ b) $\frac{4}{3}$ c) $-\frac{3}{4}$ d) $-\frac{4}{3}$ e) None of these

18. Find the slope of a line that is parallel to the line $2x - 6y = 8$

a) $\frac{1}{3}$ b) $-\frac{1}{3}$ c) 3   d) -3 e) None of these

19. Determine whether the lines $3x - 2y = 6$ and $2x - 3y = 6$ are parallel, perpendicular or neither.

a) parallel   b) perpendicular   c) neither
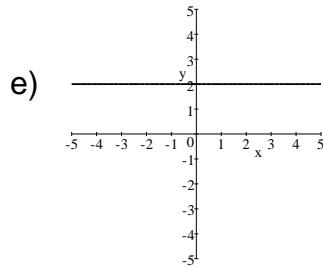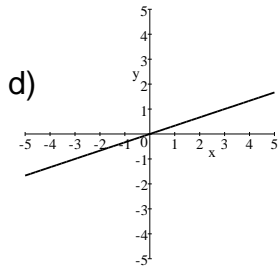
20. Which of the following is the graph of $3x + 4y = 12$
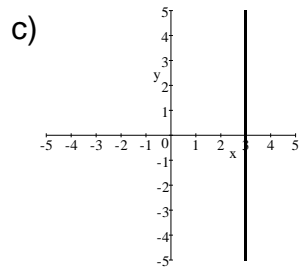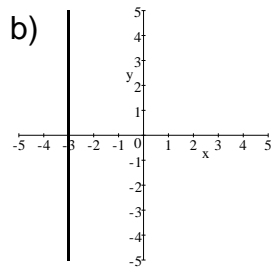
a)

b)

c)

d)

e)

21. Find the x-intercept of $4x - 3y = -12$

a) -12 b) -4 c) -3 d) 3   e) 12

22. Find the y-intercept of $3x + 2y = 6$

a) -6 b) -4 c) -3 d) 3   e) 6
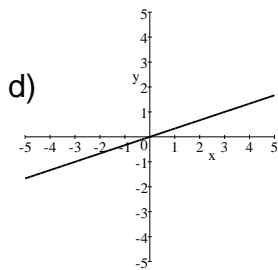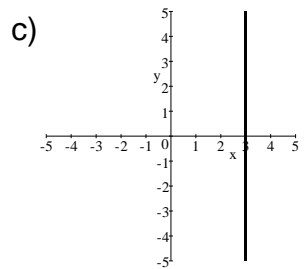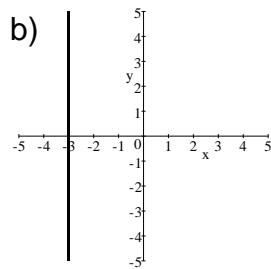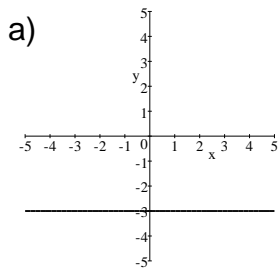
23. Which of the following is the graph of $x = -3$

a)

b)

c)

d)

e)

24. Which of the following is the graph of $y = -3$

a)

b)

c)

d)

e)

25. Solve for x: $\dfrac{3}{x^2} + \dfrac{2}{x} = 1$

a) $\{-1\}$ b) $\{0\}$ c) $\{-3\}$ d) $\{-1, 3\}$ e) $\{4\}$

26. Simplify: $\dfrac{y^{1/3}y^{2/5}}{y}$

   a) $y^{4/15}$ b) $y^{5/8}$ c) $\dfrac{1}{y^{5/8}}$ d) $\dfrac{1}{y^{4/15}}$ e) None of these

27. Solve for x: $(x+5)^2 = 3$

   a) $\{\sqrt{2}\}$ b) $\{4\}$ c) $\{1 \pm \sqrt{3}\}$ d) $\{-5 \pm \sqrt{3}\}$ e) $\{3 \pm \sqrt{5}\}$

28. Solve the system for y: $\begin{array}{l} x + y = -5 \\ -2x + y = 1 \end{array}$

   a) $y = -2$ b) $y = -3$ c) $y = 1$ d) $y = 0$ e) $y = -1$

29. A rectangular table top is 2 feet longer than it is wide, and its area is 24 square feet. Write an equation to find the length and the width of the table top and solve. Let x = the width of the table top.

   a) Length = 6 feet
      Width = 4 feet
   b) Length = 8 feet
      Width = 6 feet
   c) Length = 3 feet
      Width = 1 feet
   d) Length = 4 feet
      Width = 6 feet
   e) Length = 8 feet
      Width = 3 feet

30. What number must be added to $x^2 + 20x$ to form a perfect square trinomial?

   a) 10   b) 400   c) 100   d) 20   e) 40

31. Solve for x: $\dfrac{x}{x-3} + \dfrac{4}{x+3} = \dfrac{18}{x^2-9}$

   a) $\{10, -3\}$ b) $\{-10, 3\}$ c) $\{-3\}$ d) $\{-10\}$ e) $\emptyset$

32. Simplify: $\dfrac{4x^2 - 25y^2}{10y - 4x}$

a) $-\dfrac{2x + 5y}{2}$ b) $-x - 5y$ c) $\dfrac{2x + 5y}{2}$ d) $x + 5y$ e) $x - \dfrac{5y}{2}$

33. Solve for x: $x^2 + 6x = -11$

a) $\{3 \pm i\sqrt{2}\}$ b) $\{-3 \pm \sqrt{2}\}$ c) $\{-3 \pm i\sqrt{2}\}$ d) $\{3 \pm 2i\sqrt{5}\}$
e) $\{-3 \pm 2\sqrt{5}\}$

34. Solve for x: $5x^2 - 3x + 4 = 0$

a) $\left\{\dfrac{3 \pm \sqrt{71}}{5}\right\}$ b) $\left\{\dfrac{-3 \pm i\sqrt{71}}{10}\right\}$ c) $\left\{\dfrac{3 \pm i\sqrt{89}}{5}\right\}$ d) $\left\{\dfrac{-3 \pm \sqrt{89}}{10}\right\}$ e) $\left\{\dfrac{3 \pm i\sqrt{71}}{10}\right\}$

35. Simplify: $\sqrt[3]{250x^7y^{14}}$

a) $2xy^2\sqrt[3]{5x^2y^4}$ b) $5x^3y^7\sqrt[3]{10x}$ c) $5x^4y^{11}\sqrt[3]{2}$ d) $5x^2y^4\sqrt[3]{2xy^2}$
e) None of these

36. Simplify: $\dfrac{5}{4x^2} - \dfrac{2}{3x}$

a) $\dfrac{15 - 8x}{12x^2}$ b) $\dfrac{13}{3x}$ c) $\dfrac{3}{x}$ d) $\dfrac{5 - 2x}{x^2}$ e) $\dfrac{3}{34 - 3x}$

37. Simplify: $\dfrac{7x - 4}{x - 3} - \dfrac{13 - 3x}{x - 3}$

a) $4x - 17$ b) $\dfrac{10x - 17}{x - 3}$ c) $\dfrac{4x - 17}{x - 3}$ d) $10x - 9$ e) $\dfrac{10x - 9}{x - 3}$

38. Simplify: $3\sqrt{54} + 2\sqrt{24}$

    a) $13\sqrt{6}$ b) $5\sqrt{78}$ c) $35\sqrt{6}$ d) $30\sqrt{5}$ e) None of these

39. Rationalize the denominator: $\dfrac{6}{5\sqrt{3}}$

    a) $\dfrac{\sqrt{3}}{10}$ b) $\dfrac{\sqrt{3}}{15}$ c) $30\sqrt{3}$ d) $\dfrac{2}{5}$ e) $\dfrac{2\sqrt{3}}{5}$

40. Simplify: $(x^4 \cdot x^3)^{3/2}$

    a) $x^{21/2}$ b) x^{18} c) $x^{17/2}$ d) $2x^{21/2}$ e) $2x^{17/2}$

41. Write the equation of the line passing through the point $(-3, -2)$ with slope $\dfrac{3}{4}$

    a) $3x - 4y = -1$ b) $3x + 4y = 17$ c) $4x - 3y = 7$ d) $2x + 3y = -1$
    e) $2x - 4y = 9$

42. Solve: $(x - 7)^2 = -9$

    a) $\{4, 10\}$ b) $\{7 \pm 3i\}$ c) $\{-4, -10\}$ d) $\{7 \pm i\sqrt{3}\}$
    e) $\{-7 \pm 3i\}$

43. Solve: $x^2 = 64$

    a) $\{8, -8\}$ b) $\{4, -4\}$ c) $\{0, 8\}$ d) $\{8\}$ e) $\{4\}$

44. Solve: $x^2 = 16x$

a) $\{16\}$ b) $\{4\}$ c) $\{0\}$ d) $\{0, 16\}$ e) $\{4, -4\}$

45. Choose the system of equations that would be used to solve the following problem.

A family Arts Center charges $10 per ticket for adults and $7 per ticket for children for its performances. In the last performance, a total of 70 tickets was purchased at a total cost of $571. How many of the tickets sold were for children?

x = The number of adult tickets sold
y = The number of children tickets sold

a) $\begin{array}{l} x + y = 70 \\ 10x + 7y = 571 \end{array}$ b) $\begin{array}{l} x + y = 571 \\ 10x + 7y = 70 \end{array}$ c) $\begin{array}{l} x + y = 70 \\ 7x + 10y = 571 \end{array}$

d) $\begin{array}{l} x + y = 571 \\ 7x + 10y = 70 \end{array}$ e) None of these

MAT1033 FINAL REVIEW ANSWERS

1.	A	11.	A	21.	C	31.	D	41.	A
2.	E	12.	C	22.	D	32.	A	42.	B
3.	D	13.	B	23.	B	33.	C	43.	A
4.	B	14.	A	24.	A	34.	E	44.	D
5.	C	15.	D	25.	D	35.	D	45.	A
6.	E	16.	E	26.	D	36.	A		
7.	B	17.	A	27.	D	37.	B		
8.	A	18.	A	28.	B	38.	A		
9.	B	19.	C	29.	A	39.	E		
10.	C	20.	B	30.	C	40.	A		