

FINAL 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.) $(3x + 7)(x - 2)$ 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 for which $\frac{x - 4}{x^2 - 9}$ is undefined.
- a.) 3 b.) 3 and -3 c.) 4, 3 and -3 d.) 4, 2 and -2
5. Divide $\frac{4x - 16}{5x + 15} \div \frac{4 - x}{2x + 6}$
- a.) 0 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: $\frac{3 + \frac{7}{x}}{\frac{1}{xy} + \frac{2}{y}}$
- a.) $\frac{3xy+7}{1+2x}$ b.) $\frac{3xy+7y}{1+2x}$ c.) $\frac{3+7y}{xy+2}$ d.) $\frac{3y+7}{1+2x}$ e.) $\frac{3xy+7y}{xy+2}$
8. Solve $I = \frac{kE}{R}$ for R
- a.) $R = \frac{1}{kE}$ b.) $R = \frac{kE}{I}$ c.) $R = IE - k$ d.) $R = IEk$ e.) $R = kE - 1$
9. Solve for x: $\frac{4x+1}{4} - \frac{2x+3}{3} = \frac{7}{12}$
- a.) 4 b.) $\frac{9}{2}$ c.) -2 d.) $\frac{3}{2}$ e.) None of these
10. Riding on bicycles, Stu takes 2 hours less to travel 30 miles than Joan takes to travel 40 miles. Stu travels 5 miles per hour faster than Joan. Find the time for Stu
- a.) 2 hours b.) 3 hours c.) 4 hours d.) 5 hours e.) 6 hours
11. Solve for x: $|2x - 3| = 5$
- a.) 4 b.) 4, -1 c.) 2 d.) 1 e.) 2, 1
12. Express the following compound inequality in simplest interval form: $x + 1 > 3$ or $x + 4 < 2$
- a.) $(-2, 3)$ b.) $(-2, 2)$ c.) $(-\infty, -2) \cup (2, \infty)$ d.) $(2, \infty)$ e.) $(-\infty, -2)$
13. $\left(\frac{64}{27}\right)^{-2/3}$
- a.) $\frac{-128}{81}$ b.) $\frac{9}{16}$ c.) $\frac{81}{128}$ d.) $\frac{16}{9}$ e.) $-\frac{9}{16}$
14. Find $\sqrt{8} + \sqrt{18}$
- a.) $\sqrt{24}$ b.) 10 c.) $5\sqrt{2}$ d.) $2\sqrt{6}$ e.) None of these

15. Find: $(6 - 2i)(6 + 2i)$

- a.) 34 b.) 38 c.) 40 d.) 32 e.) None of these

16. i^{27}

- a.) i b.) $-i$ c.) 0 d.) 1 e.) -1

17. Solve for x: $\sqrt{4x - 8} = x - 2$

- a.) 6 b.) 2, 6 c.) -6 d.) $-2, -6$ e.) No solution

18. $\frac{5}{8 - \sqrt{3}} =$

- a.) 1 b.) $8 + \sqrt{3}$ c.) $\frac{5(8 + \sqrt{3})}{61}$ d.) $\frac{5(8 - \sqrt{3})}{61}$ e.) $8 - \sqrt{3}$

19. Rationalize the denominator: $\frac{2}{\sqrt[3]{2x}}$

- a.) $\frac{\sqrt[3]{2x}}{x}$ b.) $\frac{\sqrt[3]{4x^2}}{x}$ c.) $\frac{\sqrt[3]{2x}}{2x}$ d.) $\sqrt{4x}$ e.) None of these

20. Solve for x: $\sqrt{2 - 5x} = 5x$

- a.) $\left\{\frac{1}{5}\right\}$ b.) $\left\{-\frac{2}{5}\right\}$ c.) $\left\{\frac{1}{5}, -\frac{2}{5}\right\}$ d.) $\left\{\frac{1}{10}\right\}$ e.) None of these

21. Solve for x: $x^2 - 2x + 4 = 0$

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

22. Solve for x: $4 + 7x - 3x + 2 = 8x + 6$

- a.) No Solution b.) $\{0\}$ c.) $\{1\}$ d.) $\{2\}$ e.) None of these

23. 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

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

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

25. The hypotenuse of a right triangle is 8 inches longer than the shorter leg. The longer leg is 4 inches longer than the shorter leg. Find the length of the shorter leg.

- a.) 6 inches b.) 8 inches c.) 15 inches d.) 20 inches e.) None of these

26. 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.) $-\frac{7}{8}$

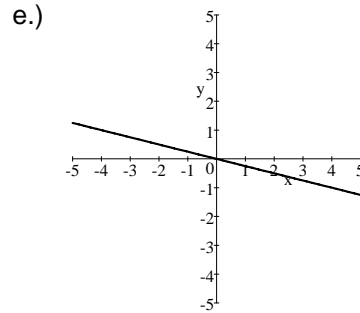
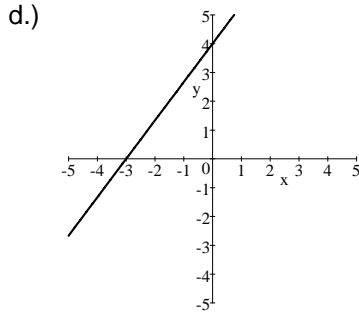
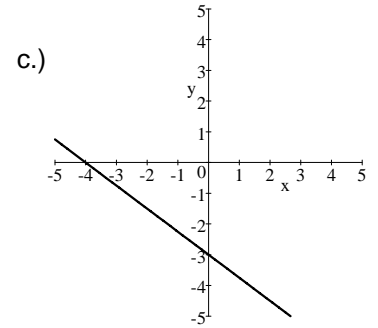
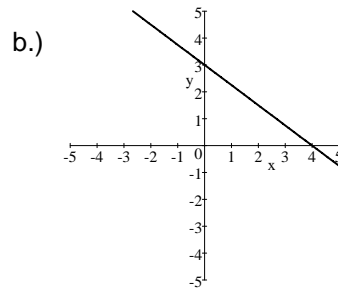
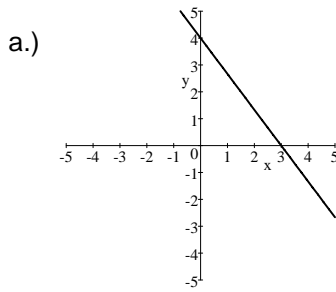
27. Write the equation of a line that contains the point $(2, 7)$ and is perpendicular to the line $4x + 3y = -6$

- a.) $4x - 3y = -13$ b.) $4x + 3y = 29$ c.) $4x - 3y = 13$
d.) $3x + 4y = 34$ e.) $3x - 4y = -22$

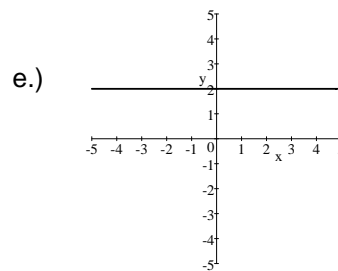
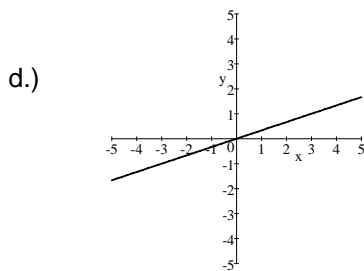
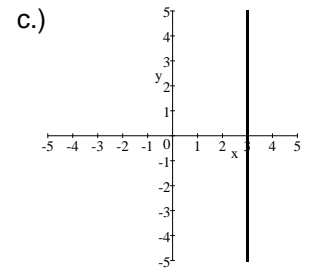
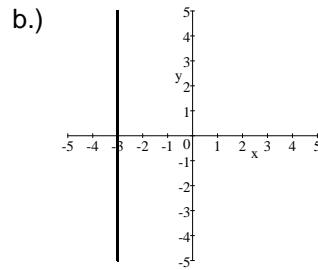
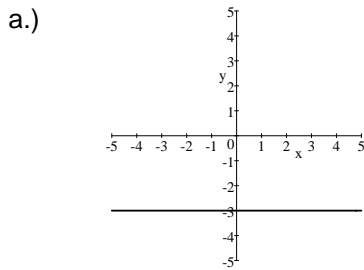
28. Determine whether the lines $3x - 2y = 6$ and $2x - 3y = 6$ are parallel, perpendicular or neither.

- a.) parallel b.) perpendicular c.) Neither

29. Which of the following is the graph of $3x + 4y = 12$?



30. Which of the following is the graph of $x = -3$



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

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

32. If $f(x) = 3x^2 - 2$, find $f(3)$

- a.) 25 b.) 21 c.) 3 d.) -11 e.) -29

33. What is the domain of the function $f(x) = \sqrt{x-3}$

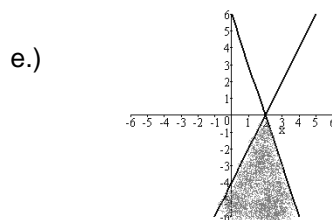
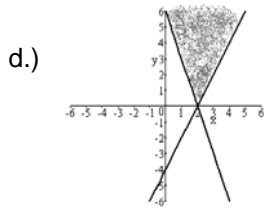
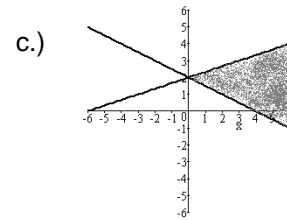
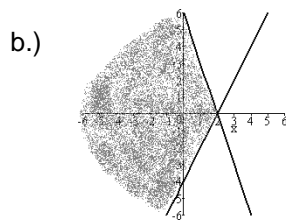
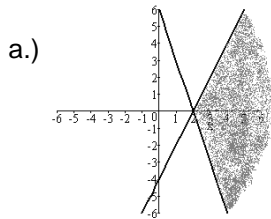
- a.) $[0, \infty)$ b.) $(-\infty, 0]$ c.) $(3, \infty)$ d.) $[3, \infty)$ e.) $(-3, 3)$

34. What is the domain of the function $f(x) = x^2 - 1$

- a.) $(-\infty, -1)$ b.) $(-1, \infty)$ c.) $(-\infty, \infty)$ d.) $[0, \infty)$ e.) $(-\infty, 0]$

35. What is the solution of the following system?

$$\begin{aligned} 3x + y &\leq 6 \\ 2x - y &\geq 4 \end{aligned}$$



36. Divide: $\frac{5m^3 - 9m^2 + 10m}{5m^2}$

a.) $m - \frac{9}{5} + 2$

b.) $m - \frac{9}{5}m - 2$

c.) $m^2 - \frac{9}{5} + 2$

d.) $m - \frac{9}{5} + \frac{2}{m}$

e.) None of these answers are correct

37. Solve for x: $\frac{3}{x^2} + \frac{2}{x} = 1$

a.) $\{-1\}$

b.) $\{0\}$

c.) $\{3\}$

d.) $\{-1, 3\}$

e.) $\{4\}$

38. Sonya can do her homework in 5 hours. It takes her friend Dana 4 hours to do her homework. How long would it take them to do their homework if they worked together?

- a.) 9 hours b.) $5/2$ hours c.) $20/9$ hours d.) 2 hours e.) None of these answers are correct

39.
$$\frac{y^{-\frac{1}{3}}y^{\frac{5}{6}}}{y}$$

- a.) $y^{\frac{1}{2}}$ b.) y c.) $\frac{1}{y}$ d.) $\frac{1}{y^{\frac{1}{2}}}$ e.) None of these

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

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

41. Solve for d: $k = \frac{md^2}{c}$

- a.) $d + \sqrt{ckm}$ b.) $d - \frac{kc}{m}$ c.) $d = \pm \frac{\sqrt{ckm}}{m}$ d.) $d = \frac{mc}{k}$ e.) None of these

42. Solve the system for y:

$$\begin{aligned} x + y &= -5 \\ -2x + y &= 1 \end{aligned}$$

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

43. A rectangular table top is 2 feet longer than it is wide, and its perimeter is 20 feet. Find the length and the width of the table top.

- a.) $\begin{aligned} \text{Length} &= 6 \text{ feet} \\ \text{Width} &= 4 \text{ feet} \end{aligned}$ b.) $\begin{aligned} \text{Length} &= 8 \text{ feet} \\ \text{Width} &= 6 \text{ feet} \end{aligned}$ c.) $\begin{aligned} \text{Length} &= 3 \text{ feet} \\ \text{Width} &= 1 \text{ feet} \end{aligned}$
d.) $\begin{aligned} \text{Length} &= 7 \text{ feet} \\ \text{Width} &= 5 \text{ feet} \end{aligned}$ e.) $\begin{aligned} \text{Length} &= 5 \text{ feet} \\ \text{Width} &= 3 \text{ feet} \end{aligned}$

44. A chemist needs 12 liters of a 40% alcohol solution. She must mix a 20% solution and a 50% solution. How many liters of 50% solution will be required to obtain what she needs?

- a.) 2 liters b.) 4 liters c.) 6 liters d.) 8 liters e.) 10 liters

45. A plane flies 560 miles in 1.75 hours traveling with the wind. The return trip later against the same wind takes the plane 2 hours. Find the speed of the plane.

- a.) 100 mph b.) 140 mph c.) 200 mph d.) 250 mph e.) 300 mph

MAT1033 FINAL REVIEW ANSWERS

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