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

a) 3 b) $3 \text{ and } -3$ c) $4, 3 \text{ and } -3$ d) $4, 2 \text{ and } -2$

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: $\frac{3+\frac{7}{x}}{\frac{1}{xy}+\frac{2}{y}}$

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 for x: $\frac{4x+1}{4}-\frac{2x+3}{3}=\frac{7}{12}$

a) $\{4\}$ b) $\left\{-\frac{9}{2}\right\}$ c) $\{-2\}$ d) $\left\{\frac{3}{2}\right\}$ e) None of these

9. If $f(x)=6x+11$, find $f(-3)$

a) 7 b) -7 c) 29 d) -29 e) None of these

10. Determine if the relation is a function: $\{(3,4),(7,-2),(-2,9),(3,6)\}$

a) Yes, it is a function b) No, it is not a function

11. Find: $\left(\frac{64}{27}\right)^{-2/3}$

a) $-\frac{128}{81}$ b) $\frac{9}{16}$ c) $\frac{81}{128}$ d) $\frac{16}{9}$ e) $-\frac{9}{16}$

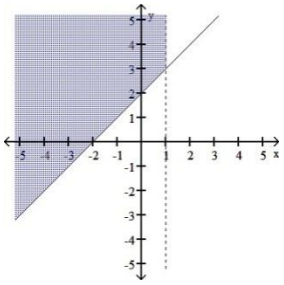
12. Find: $\sqrt{8}+\sqrt{18}$

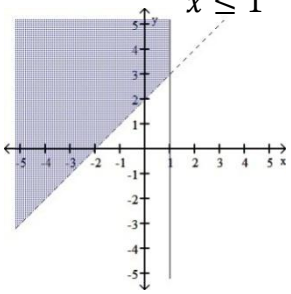
a) $\sqrt{24}$ b) 10 c) $5\sqrt{2}$ d) $2\sqrt{6}$ e) None of these

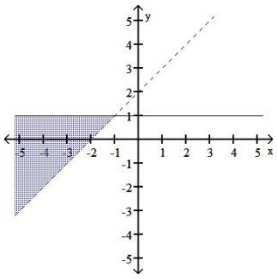
13. Find: $(6-2i)(6+2i)$

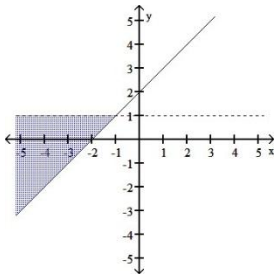
a) 34 b) 38 c) 40 d) 32 e) None of these

14. Graph the system of inequalities: $y > x + 2$, $x \leq 1$

a) 

b) 

c) 

d) 

e) None of these

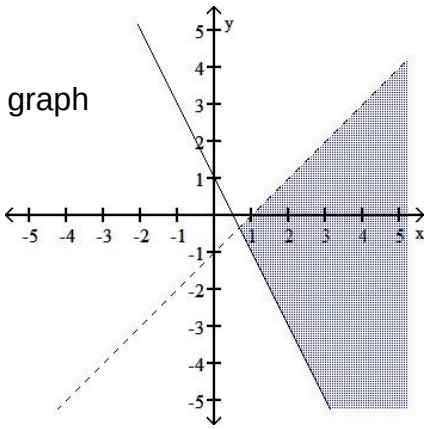
15. Rationalize the denominator: $\frac{5}{8-\sqrt{3}}$

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

16. 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

17. What is the system of linear inequalities represented by the graph



a) $y < x - 1$, $y \geq -2x + 1$ b) $y \leq x - 1$, $y > -2x + 1$ c) $y > x - 1$, $y \leq -2x + 1$

d) $y \geq x - 1$, $y < -2x + 1$ e)None of these

18. 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) $\{1 \pm i\sqrt{5}\}$

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

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

20. 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

21. 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) $\{0\}$

22. 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

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

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

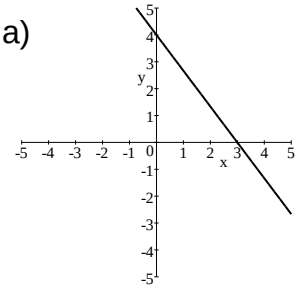
a) $4x - 3y = -13$ b) $4x + 3y = 29$ c) $4x - 3y = 13$
d) $3x + 4y = 34$ e) $3x - 4y = -22$

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

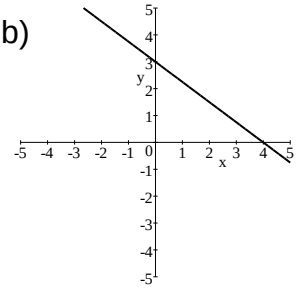
a) parallel b) perpendicular c) neither

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

a)



b)



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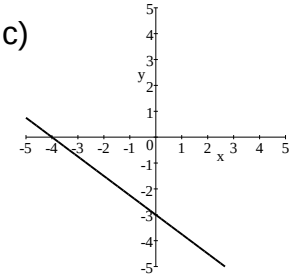
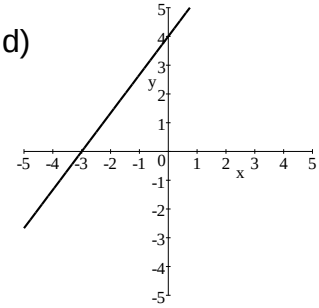
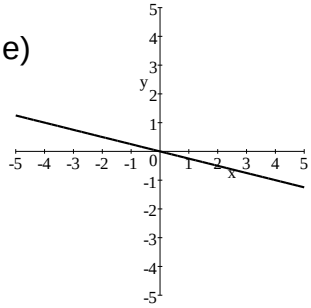


d)



e)



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

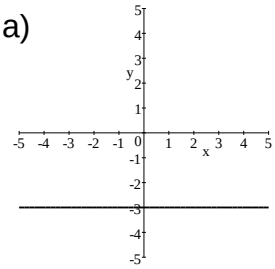
a) $m - \frac{9}{5} + 2$ b) $m - \frac{9}{5}m - 2$ c) $m^2 - \frac{9}{5} + 2$

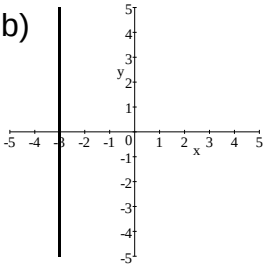
d) $m - \frac{9}{5} + \frac{2}{m}$ e) None of these

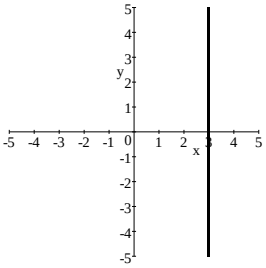
28. Find the x-intercept of $4x - 3y = -12$

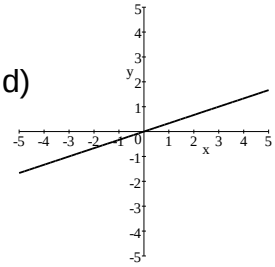
a) -12 b) -4 c) -3 d) 3 e) 12

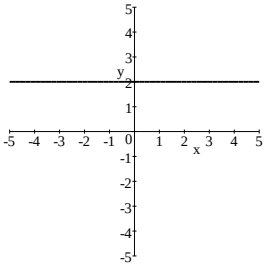
29. Which of the following is the graph of $x = -3$

a) 

b) 

c) 

d) 

e) 

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

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

31. Simplify: $\frac{y^{1/3}y^{3/6}}{y}$

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

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

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

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

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

34. 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) $\begin{matrix}\text{Length} = 6 \text{ feet} \\ \text{Width} = 4 \text{ feet}\end{matrix}$ b) $\begin{matrix}\text{Length} = 8 \text{ feet} \\ \text{Width} = 6 \text{ feet}\end{matrix}$ c) $\begin{matrix}\text{Length} = 3 \text{ feet} \\ \text{Width} = 1 \text{ feet}\end{matrix}$

d) $\begin{matrix}\text{Length} = 7 \text{ feet} \\ \text{Width} = 5 \text{ feet}\end{matrix}$ e) $\begin{matrix}\text{Length} = 5 \text{ feet} \\ \text{Width} = 3 \text{ feet}\end{matrix}$

35. 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

MAT1033 FINAL REVIEW ANSWERS

1.	A	**8.**	A	**15.**	C	**22.**	E	**29.**	B
2.	E	**9.**	B	**16.**	B	**23.**	E	**30.**	D
3.	D	**10.**	B	**17.**	A	**24.**	E	**31.**	E
4.	B	**11.**	B	**18.**	A	**25.**	C	**32.**	D
5.	C	**12.**	C	**19.**	B	**26.**	B	**33.**	B
6.	E	**13.**	C	**20.**	A	**27.**	D	**34.**	A
7.	B	**14.**	B	**21.**	D	**28.**	C	**35.**	C