

Math 40 Final Exam Review

1. Which set of numbers does -46 not belong to?

- a. Natural numbers b. Rational numbers c. Integers d. Real numbers

Simplify – (Positive exponents only)

2. $\left|-\frac{3}{4}\right|$

- a. $-\frac{4}{3}$ b. $\frac{3}{4}$ c. $\frac{3}{-4}$ d. $\frac{4}{3}$

3. $4(4 - 3)^2 + 7^2$

- a. 200 b. 77 c. 65 d. 53

4. $\frac{3}{5} + \frac{21}{10} - \frac{1}{6}$

- a. $\frac{23}{9}$ b. $\frac{38}{15}$ c. $\frac{79}{30}$ d. $\frac{151}{300}$

5. $-\frac{1}{3}\left(-12z + \frac{6}{5}\right)$

- a. $-4z + \frac{2}{5}$ b. $4z + \frac{2}{5}$ c. $4z - \frac{2}{5}$ d. $4z + \frac{6}{5}$

6. $(-7)^0$

- a. 0 b. -7 c. 1 d. 7

7. $\frac{-54a^4b^2}{12a^2b^5}$

- a. $\frac{-9a^2}{2b^3}$ b. $\frac{-9a^6b^3}{2}$ c. $\frac{9a^2}{2b^3}$ d. $\frac{-9b^3}{a^{-2}}$

8. $(2n^3m^2)^3(mn^3)^2$

- a. $2n^{11}m^7$ b. $8n^{11}m^7$ c. $8n^{15}m^8$ d. $6n^{15}m^8$

9. $\left(\frac{4a^5b^6}{a^3b^5}\right)^3$

- a. $64a^6b^3$ b. $4a^{12}b^{13}$ c. $64a^2b$ d. $4a^6b^3$

10. 2^{-2}

- a. -4 b. $-\frac{1}{4}$ c. $\frac{1}{4}$ d. 0

11. $(12x^3y^2 + 24xy + 14) + (8xy - 2x^3y^2 - 12)$

- a. $42x^4y^3 + 2$ b. $20x^3y^2 + 22xy + 2$ c. $10x^3y^2 + 32xy + 2$ d. $10x^6y^4 + 32x^2y^2 + 2$

12. $(7x^2 + 14x) - (-3x^2 + 2x)$

- a. $4x^4 + 16x^2$ b. $4x^2 + 16x$ c. $10x^2 + 12x$ d. $10x^2 + 16x$

13. $(2x + 7)(3x - 5)$

- a. $6x^2 - 35$ b. $6x^2 + 11x - 35$ c. $6x^2 + 11x + 35$ d. $5x - 35$

14. $(10z + 5)(z^2 - 3z + 2)$

- a. $10z^3 + 20z + 5z^2 + 10$ b. $10z^3 - 30z^2 + 20z + 10$ c. $10z^3 - 25z^2 + 5z + 10$ d. $z^2 - 30z + 10$

15. $(19y^3 + y^2 - 31y) \div (2y^2)$

a. $19y^3 + y^2 - \frac{31}{2y}$

b. $\frac{19}{2}y^{3/2} + \frac{y}{2} - \frac{31}{2}y^{1/2}$

c. $\frac{19}{2}y + \frac{1}{2} - \frac{31}{2}y$

d. $\frac{19}{2}y + \frac{1}{2} - \frac{31}{2y}$

16. $\frac{5n^3 - n^2 + 2n - 3}{n+3}$

a. $5n^2 - 16n + 50 - \frac{153}{n+3}$

b. $5n - 18 + \frac{22n}{n+3}$

c. $5n^2 + 4n + 3$

d. $5n^2 - 16n + 50$

17. $\frac{4x-28}{x} \cdot \frac{x^2+3x}{7x-49}$

a. $\frac{4x^3-84x}{7x^2-49x}$

b. $\frac{4(x+3)}{7}$

c. $\frac{4x^2+12x}{7x^2-49}$

d. $\frac{7(x-7)}{x}$

18. $\frac{x}{x+9} - \frac{3-x^2}{x^2-81}$

a. $\frac{x^2+x-3}{-x^2+x+90}$

b. $\frac{x^3+9x-3}{(x^2-81)(x+9)}$

c. $\frac{-9x-3}{(x+9)(x-9)}$

d. $\frac{2x^2-9x-3}{(x+9)(x-9)}$

Solve the following equations:

19. $-\frac{3}{8} + m = \frac{1}{4}$

a. $m = -\frac{1}{8}$

b. $m = -\frac{2}{3}$

c. $m = \frac{5}{8}$

d. $m = 7$

20. $11z = 13z + 12$

a. $z = \frac{13}{11}z + 12$

b. $z = -6$

c. $z = 6$

d. $z = -8$

21. $\frac{7}{2}t + 4 = 5 + \frac{3}{2}t$

a. $t = \frac{1}{2}$

b. $t = -\frac{5}{4}$

c. $t = \frac{1}{5}$

d. $t = -\frac{1}{5}$

22. $4(t-1) + 3 = 2(t+5)$

a. $t = -1$

b. $t = \frac{11}{2}$

c. $t = \frac{5}{4}$

d. $t = -\frac{3}{2}$

23. $\frac{1}{2}(2n-5) + \frac{4}{3} = \frac{5}{6}n - \frac{3}{2}$

a. $n = 13$

b. $n = -\frac{11}{6}$

c. $n = \frac{5}{3}$

d. $n = -2$

24. Solve for z: $10w + 3z - 9 = w$

a. $z = \frac{1}{3}(-9w + 9)$

b. $3z = -9w + 9$

c. $z = 11w - 9$

d. $z = \frac{w+9}{3-10w}$

25. $\frac{y}{8} = 9$

a. $y = 72$

b. $y = 17$

c. $y = \frac{9}{8}$

d. $y = 1$

Solve the following inequalities and express your answers in interval notation:

26. $y - 18 > 8$

- a. $(26, \infty)$ b. $(-18, 8)$ c. $(-10, \infty)$ d. $[26, \infty)$

27. $4(x - 3) - 3x \geq 6$

- a. $(-\infty, 18]$ b. $(18, \infty)$ c. $[9, \infty)$ d. $[18, \infty)$

28. $11 \leq 7(n + 4) - 5n$

- a. $[5, 11]$ b. $[-\frac{17}{2}, \infty)$ c. $(-\infty, -\frac{17}{2}]$ d. $(-\frac{17}{2}, \infty)$

29. $-8 \leq 2x - 5 < 14$

- a. $[-\frac{3}{2}, 14)$ b. $[-\frac{3}{2}, \infty)$ c. $[-8, \frac{19}{2})$ d. $[-\frac{3}{2}, \frac{19}{2})$

Find all solutions:

30. $3t^2 + 11t - 20 = 0$

- a. $t = -\frac{5}{3}, t = 4$ b. $t = \frac{4}{3}, t = -5$ c. $t = -\frac{4}{3}, t = 5$ d. $t = \frac{5}{3}, t = -4$

31. $t^2 - 9t = -14$

- a. $t = 0, t = 9$ b. $t = -2, t = -7$ c. $t = 2, t = 7$ d. $t = 0, t = -9$

Factor Completely:

32. $30x^4 - 48x^2 + 15x$

- a. $30x^4(1 - 18x^2 + 15x^3)$ b. $x(30x^3 - 48x + 15)$ c. $15x(2x^3 - 3x + 1)$ d. $3x(10x^3 - 16x + 5)$

33. $8x^3 - 12 + 32x^2 - 3x$

- a. $(8x^2 - 3)(x + 4)$ b. $8x^3 - 12 + x(32x - 3)$ c. $(4x^2 - 3)(x + 8)$ d. $(8x^2 - 4)(x + 3)$

34. $10t^5 + 50t^4 - 15t^3 - 75t^2$

- a. $(t + 5)(10t^4 - 15t^2)$ b. $5t^2(t + 5)(2t - 3)$ c. $(t^2 + 5t)(10t^3 - 15t)$ d. $5t^2(2t^2 - 3)(t + 5)$

35. $z^2 + 2z - 8$

- a. $(z - 4)(z + 2)$ b. $(z - 5)(z + 1)$ c. $(z + 4)(z - 2)$ d. Polynomial is prime

36. $2y^2 + 5y + 3$

- a. $(2y + 1)(y + 3)$ b. $(2y - 1)(y - 3)$ c. $(2y + 3)(y + 1)$ d. $(2y + 3)(2y + 1)$

37. $x^4 - 16$

a. $(x^2 - 4)(x^2 + 4)$

b. $(x^2 - 4)^2$

c. $(x + 2)^2(x - 2)^2$

d. $(x + 2)(x - 2)(x^2 + 4)$

38. $24x^2 - 30$

a. $6(2x + 5)(2x - 5)$

b. $6(4x^2 - 5)$

c. $(24x - 6)(x + 5)$

d. Polynomial is prime

39. $27t^3 + 8$

a. $(3t + 2)^3$

b. $(3t + 2)(9t^2 - 6t + 4)$

c. $(3t - 2)(9t^2 + 6t + 4)$

d. Polynomial is prime

40. Identify which of the values below could be used to clear fractions in the equation: $\frac{7}{5}x - \frac{1}{7} = 5$

a. 5

b. 12

c. 10

d. 35

41. If a \$7,000 original investment earns simple interest for 5 years, and is worth \$11,200 at the end of 5 years, what is the interest rate?

a. 62.5%

b. 37.5%

c. 21%

d. 12%

42. Evaluate the following expression for $x = -10$: $6x^2$

a. -600

b. 3600

c. 600

d. 500

43. Find the domain of the following expression: $\frac{2}{x-12}$

a. $\{x|x \neq 12\}$

b. $\{x|x = 12\}$

c. $\{x|x \neq -12\}$

d. $\{x|x \neq 12, x \neq -2\}$

44. The point $(-11, -3)$ is in the _____ quadrant.

a. First

b. Second

c. Third

d. Fourth

45. Find x so that $(x, -20)$ is a solution to $2x + 3y = 12$.

a. $x = 72$

b. $x = -48$

c. $x = -24$

d. $x = 36$

46. Find the x - and y -intercepts of $y = 12x + 13$

a. x -int. : $(\frac{13}{12}, 0)$;

b. x -int. : $(-\frac{13}{12}, 0)$;

c. x -int. : $(0, -13)$;

d. x -int. : $(13, 0)$;

y -int. : $(0, -13)$

y -int. : $(0, 13)$

y -int. : $(\frac{13}{12}, 0)$

y -int. : $(0, -\frac{13}{12})$

47. Write the equation of a horizontal line that goes through the point $(-13, 49)$.

a. $y = -13$

b. $x = -13$

c. $x = 49$

d. $y = 49$

48. Use the slope formula to determine the slope of the line containing the following two points: $(1, -2)$ and $(-7, -2)$

- a. 0 b. $-\frac{5}{2}$ c. $-\frac{9}{2}$ d. Undefined

49. Are the two lines parallel, perpendicular, or neither? $2x + 2y = 8$; $3y = -3x + 20$

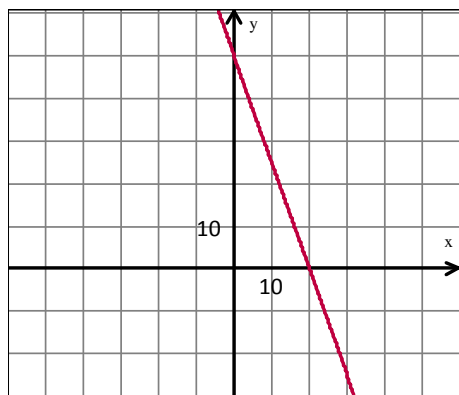
- a. Parallel b. Perpendicular c. Neither

50. Write the equation of the line through $(\frac{5}{2}, -5)$ with slope $-\frac{1}{4}$.

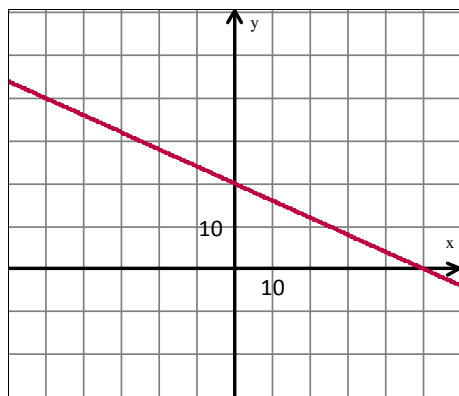
- a. $y = -\frac{1}{4}x + 12$
b. $y = -\frac{1}{4}x - \frac{35}{8}$
c. $y = 4x - 15$
d. $y = -\frac{1}{4}x - \frac{5}{12}$

51. Which is the graph of $5x + 2y = 100$?

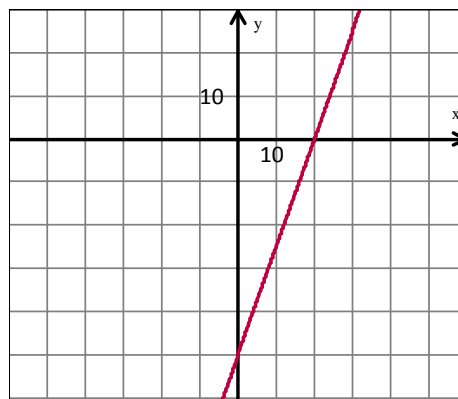
a.



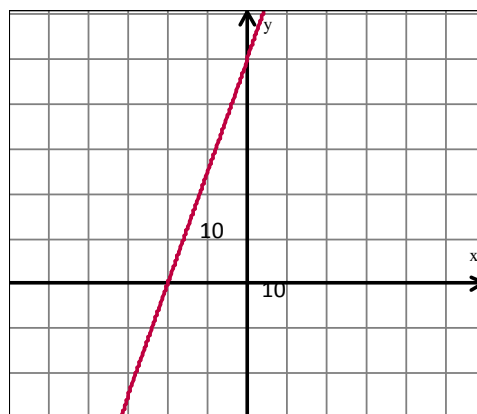
b.



c.



d.



Answer Key

- | | |
|-------|-------|
| 1. A | 27. D |
| 2. B | 28. B |
| 3. D | 29. D |
| 4. B | 30. B |
| 5. C | 31. C |
| 6. C | 32. D |
| 7. A | 33. A |
| 8. C | 34. D |
| 9. A | 35. C |
| 10. C | 36. C |
| 11. C | 37. D |
| 12. C | 38. B |
| 13. B | 39. B |
| 14. C | 40. D |
| 15. D | 41. D |
| 16. A | 42. C |
| 17. B | 43. A |
| 18. D | 44. C |
| 19. C | 45. D |
| 20. B | 46. B |
| 21. A | 47. D |
| 22. B | 48. A |
| 23. D | 49. A |
| 24. A | 50. B |
| 25. A | 51. A |
| 26. A | |