

Math 40
Final Review (Version 2)

1. Which set of numbers does -13 not belong to?
a. Rational Numbers b. Real Numbers c. Natural Numbers d. Integers

2. Find the absolute value of $\left| -\frac{9}{7} \right|$
a. $\frac{7}{9}$ b. $-\frac{9}{7}$ c. $-\frac{7}{9}$ d. $\frac{9}{7}$

3. Multiply: $-8(5x - 2y + 3)$
a. $-40x + 16y - 24$ b. $-40x + 16y + 24$
c. $40x - 16y + 24$ d. $-13x - 10y - 5$

4. Simplify: $36 \div (-2)^2 + 4[5 - 3(8 - 9)^5]$
a. 23 b. 41 c. -1 d. 17

5. Perform the indicated operation and simplify if possible: $-\frac{5}{9} + \frac{2}{3} + \frac{6}{18}$
a. $\frac{8}{18}$ b. $\frac{7}{18}$ c. $\frac{4}{9}$ d. $\frac{14}{9}$

6. Simplify: $(-1)^7 + 7^0$
a. 1 b. 0 c. 6 d. -1

7. Simplify: $(a^4b^6)(a^2b)^5$
a. $a^{11}b^{11}$ b. a^6b^{12} c. $a^{28}b^{30}$ d. $a^{14}b^{11}$

8. Simplify: $\left(\frac{5x^7y}{-2z^4}\right)^3$

a. $-\frac{15x^{21}y^3}{6z^{12}}$ b. $\frac{125x^{21}y^3}{8z^{12}}$ c. $-\frac{125x^{10}y^4}{8z^7}$ d. $-\frac{125x^{21}y^3}{8z^{12}}$

9. Express using positive exponents, then simplify if possible: $(-2)^{-5}$

a. $-\frac{1}{32}$ b. $\frac{1}{32}$ c. -32 d. 10

10. Add: $(6x^2 - 2xy + y^2) + (5x^2 - 8xy + 2y^2)$

a. $11x^2 + 6xy + 3y^2$ b. $11x^2 - 10xy + 3y^2$
c. $11x^2 + 10xy + 3y^2$ d. $11x^4 - 10x^2y^2 + 3y^4$

11. Subtract: $-4x^2 + 2x - (-5x^2 + 2x + 3)$

a. $-9x^2 - 3$ b. $-9x^2 + 4x - 3$
c. $x^2 - 3$ d. $x^2 + 3$

12. Multiply: $(3t - 4)(2t + 3)$

a. $5t^2 - 12$ b. $6t^2 + 17t - 12$
c. $6t^2 + t - 12$ d. $6t^2 + t + 12$

13. Multiply: $(2a + 5)(a^2 - 3a + 2)$

a. $2a^3 + a^2 - 11a + 10$ b. $2a^3 - a^2 - 11a + 10$
c. $a^2 - 11a + 10$ d. $2a^3 - 11a^2 - 9a + 10$

14. Divide: $(42x^5 - 36x^3 + 9x^2) \div 6x^2$

a. $7x^3 - 6x + \frac{3}{2}$

b. $7x^3 - 6x + \frac{2}{3}$

c. $7x^{\frac{5}{2}} - 6x^{\frac{3}{2}} + \frac{3}{2}x$

d. $7x^3 + 6x + \frac{3}{2}$

15. Divide: $\frac{2x^2+11x-5}{x+6}$

a. $2x - 1 + \frac{1}{x+6}$

b. $2x + 1 + \frac{1}{x+6}$

c. $2x - 1 - \frac{1}{x+6}$

d. $2x^2 + 11 - \frac{5}{6}$

16. Evaluate the polynomial $4x^2 - 6x + 9$ for $x = 3$

a. 13

b. 27

c. 36

d. 135

17. Multiply and Simplify, if possible: $\frac{4v-8}{5v} \cdot \frac{15v^2}{4v^2-16v+16}$

a. $-\frac{60v^3}{20v^3-80v^2+80v}$

b. $\frac{3v^2}{v^2-2v}$

c. $\frac{3v}{v+2}$

d. $\frac{3v}{v-2}$

18. Subtract and Simplify, if possible: $\frac{8p}{p^2-16} - \frac{p}{p-4}$

a. $\frac{p}{p+4}$

b. $\frac{7p}{p^2-p-12}$

c. $-\frac{p}{p-4}$

d. $-\frac{p}{p+4}$

19. List all numbers for which the rational expression is undefined: $\frac{p}{p^2-7p+10}$

a. $p = -2, -5$

b. $p = 2, 5$

c. $p = 0$

d. $p = 0, 2, 5$

20. Solve for x : $6 - x = -2$
a. $x = 8$ b. $x = -8$ c. $x = 4$ d. $x = -4$

21. Solve for q : $6q - 5 = 7 + 2q$
a. $q = 4$ b. $q = \frac{3}{2}$ c. $q = 3$ d. $q = \frac{1}{4}$

22. Solve for c : $13 - (2c + 2) = 2(c + 2) + 3c$
a. $c = \frac{11}{7}$ b. $c = 1$ c. $c = 5$ d. $c = -1$

23. Solve for x : $\frac{1}{3}x + \frac{4}{5} = \frac{2}{3} + \frac{2}{5}x$
a. $x = \frac{4}{5}$ b. $x = -2$ c. $x = 2$ d. $x = 3$

24. Solve for x : $\frac{3}{4}(3x - 1) - \frac{2}{3} = \frac{1}{6}(2x + 5)$
a. $x = \frac{27}{23}$ b. $x = \frac{10}{7}$ c. $x = 4$ d. $x = 3$

25. Solve for d : $5(d - 4) = 3(d - 3) - 4$
a. $d = -\frac{3}{2}$ b. $d = -\frac{1}{2}$ c. $d = \frac{5}{2}$ d. $d = \frac{7}{2}$

26. Solve for h : $2A = ah + bh$
a. $h = \frac{2A}{a+b}$ b. $h = 2A - a - b$ c. $h = -\frac{2A}{a+b}$ d. $h = \frac{A}{a+b}$

27. Alvin borrowed \$5,000 from his cousin at a simple interest rate of 4%. How much interest will he owe his cousin after 1 year?

- a. \$ 2,000 b. \$ 1,200 c. \$ 200 d. \$ 20

28. Solve: $-4x > 28$

- a. $x > -7$ b. $x > 7$ c. $x < -7$ d. $x < 7$

29. Solve and graph on the number line: $n - 4 > -3$

a. $n > -7$



b. $n > 1$



c. $n < 1$



d. $n < -7$



30. Solve and give the answer in interval notation: $3(t - 2) \geq 9(t + 2)$

- a. $(-\infty, -4]$ b. $[4, \infty)$ c. $(-\infty, -4)$ d. $(-\infty, -2]$

31. Solve the inequality for x: $7 \leq 3x - 2 \leq 13$

- a. $[3, 5]$ b. $(3, 5)$ c. $\left[\frac{5}{3}, \frac{11}{3}\right]$ d. $[-5, -3]$

32. Factor completely: $6y^3 + 18y^2 - 240y$

- a. $6y(y^2 + 3y - 40)$ b. $6y(y + 5)(y - 8)$
c. $3y(y + 8)(2y - 10)$ d. $6y(y + 8)(y - 5)$

33. Factor by grouping: $2x^3 - 12x^2 - x + 6$
- a. $(x + 6)(2x^2 + 1)$ b. $(2x - 1)(x^2 - 6)$
c. $(x - 6)(2x^2 - 1)$ d. $(x + 6)(2x^2 - 1)$
34. Factor out the Greatest Common Factor: $-21r^5t^2 - 14r^4t^4 + 28r^3t^6$
- a. $7r^3t^2(-3r^2 + 2rt^2 + 4t^4)$ b. $-7r^3t^2(3r^2 + 2rt^2 - 4t^4)$
c. $-7r^2t^2(3r^3 + 2r^2t^2 - 4rt^4)$ d. $7r^3t^2(-21r^2 - 14rt^2 + 28t^4)$
35. Factor completely: $d^2 - 7d + 10$
- a. $(d - 5)(d - 2)$ b. $(d - 2)(d + 5)$
c. $(d + 5)(d + 2)$ d. $(d + 2)(d - 5)$
36. Factor completely: $5t^2 - 21t + 18$
- a. $(t - 3)(5t - 6)$ b. $(5t - 3)(t - 6)$
c. $(t + 3)(5t + 6)$ d. Does not factor
37. Factor completely: $16a^2 - 81$
- a. $(4a - 9)(4a - 9)$ b. $(8a + 9)(8a - 9)$
c. $(4a + 9)(4a - 9)$ d. $(2a + 3)(2a - 3)(4a + 9)$
38. Factor completely: $2x^2 - 40x + 200$
- a. $(x - 10)(x - 10)$ b. $2(x - 10)(x - 10)$
c. $2(x + 10)(x + 10)$ d. $(2x + 10)(x + 20)$
39. Factor completely: $8a^3 + 125b^3$
- a. $(2a + 5b)(2a^2 - 10ab + 5b^2)$ b. $(2a + 5b)(4a^2 - 10ab + 25b^2)$
c. $(2a - 5b)(4a^2 + 10ab + 25b^2)$ d. $(8a + 125b)(a^2 - ab + b^2)$

40. Solve: $(x + 5)(x - 4) = 0$
a. $x = -4, 5$ b. $x = -5, -4$ c. $x = 4, 5$ d. $x = 4, -5$
41. Solve: $9x^2 + 12x - 45 = 0$
a. $x = -\frac{5}{3}, 3$ b. $x = -3, 5$
c. $x = -3, \frac{5}{3}$ d. $x = -3, \frac{3}{5}$
42. Solve: $x^2 - 7x = 18$
a. $x = 2, -9$ b. $x = 2, 9$ c. $x = -2, 9$ d. $x = -2, -9$
43. In which quadrant is the point $(1, -5)$ located?
a. Q I b. Q II c. Q III d. Q IV
44. Find x so that $(x, -5)$ is a solution to $5x - 2y = 15$.
a. $x = -1$ b. $x = -20$ c. $x = 5$ d. $x = 1$
45. Find the x and y intercepts of $2x - 3y = 9$
a. $(0, -3)$ and $(\frac{9}{2}, 0)$ b. $(-3, 0)$ and $(0, \frac{9}{2})$
c. $(0, 3)$ and $(-\frac{9}{2}, 0)$ d. $(0, 9)$ and $(9, 0)$
46. Write the equation of a horizontal line that goes through the point $(-2, 2)$.
a. $y = -2$ b. $y = 2$ c. $x = -2$ d. $x = -2$
47. Find the slope of the line containing the given pair of points: $(-4, 2)$ and $(2, -3)$.
a. $m = -\frac{5}{6}$ b. $m = -\frac{6}{5}$ c. $m = \frac{5}{6}$ d. $m = \frac{1}{2}$

48. Determine whether the two lines are parallel, perpendicular, or neither.

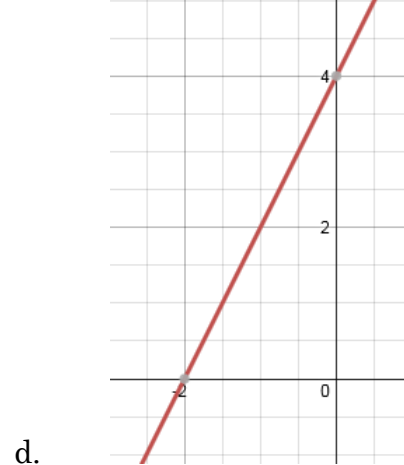
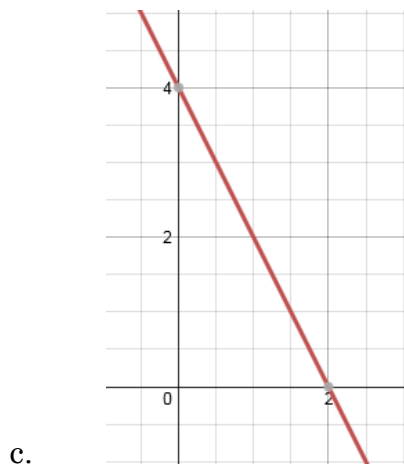
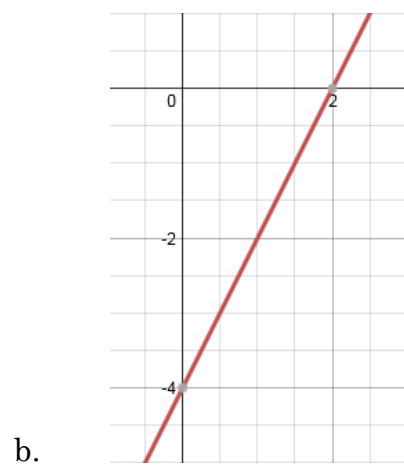
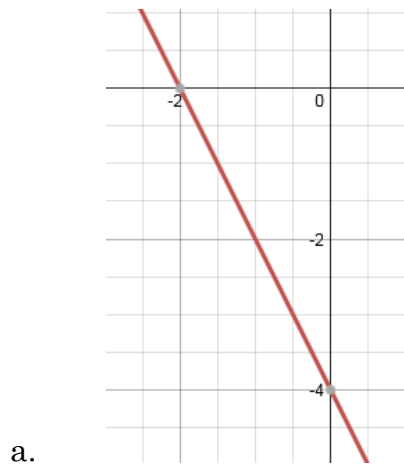
$$y = 3x - 5 \quad \text{and} \quad 3y + x = 12$$

- a. Parallel b. Perpendicular c. Neither d. Not Enough Information

49. Write the equation for a line with a slope of -1 that contains the point $(-3, 6)$.

- a. $y = -x - 3$ b. $y = -x - 9$
c. $y = -x + 3$ d. $y = x + 9$

50. Determine the graph for the given equation: $6x + 3y = 12$



Answer Key

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