Math 31
Final Review (Fall 2024)

This final review is formatted to be similar to the final exam. The final exam will have 50 questions and you will be able to bring one 3" × 5" index card, front and back, to the exam.

Multiple Choice: Choose the best possible answer.

1. Which set of numbers does negative 4 (-4) **not** belong to?

   a. Rational Numbers b. Real Numbers c. Whole Numbers d. Integers

2. Simplify: $9 + 24 \div 3 - 3 \cdot (-2)$

   a. 23 b. -16 c. 17 d. 12

3. Simplify: $-27.6 + 14 \div 0.7 + 2.4$

   a. 50 b. -2.6 c. 17.0 d. -5.2

4. Perform the indicated operations and simplify: $\left(-\frac{1}{6}\right) \cdot \left(-\frac{12}{5}\right) + 2$

   a. $\frac{8}{5}$ b. $\frac{12}{5}$ c. $\frac{4}{5}$ d. -1

5. Perform the indicated operations and simplify: $\frac{3}{4} \cdot \frac{5}{9} + \frac{2}{3} \div \frac{8}{7}$

   a. $\frac{20}{63}$ b. $\frac{33}{28}$ c. $\frac{279}{193}$ d. 1

6. Find a decimal approximation for the number. Round to the thousandths place:

   $$\sqrt{50}$$

   a. 7.072 b. 7.1 c. 7.071 d. 7.07

7. Convert the fraction $\frac{13}{16}$ to a percent.

a. 812.5% b. 81.25% c. 0.8125% d. 8.125%

8. Simplify: $16 \div 0$

a. Undefined b. 0 c. 16 d. $\frac{1}{16}$

9. Convert the decimal 0.0379 to a percent

a. 0.379% b. 3.79% c. 37.9% d. 0.0379%

10. 48% of what number is 12?

a. 5.76 b. 4 c. 576 d. 25

11. A pair of jeans that originally retailed for $75 is marked down by 20%. What is the dollar amount of the discount?

a. $55 b. $58.50 c. $60 d. $15

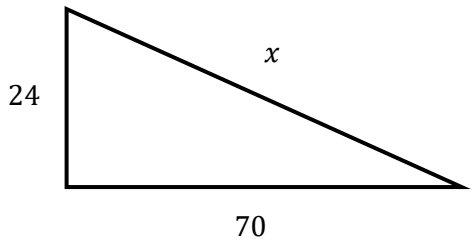
12. Multiply: $-2xy(xy^2 - 9xy + 3x - 4y + 12)$

a. $-2x^2y^3 + 18x^2y^2 - 6x^2y + 8xy^2 - 24xy$
b. $2x^2y^3 - 18x^2y^2 + 6x^2y - 8xy^2 + 24xy$
c. $-2x^2y^3 - 18x^2y^2 - 6x^2y - 8xy^2 - 24xy$
d. $-2x^2y^3 + 18x^2y^2 + 6x^2y + 8xy^2 + 12$

13. Simplify: $(5 - 8)^3 + |-6 - 7\,(2)|$

a. -7 b. 47 c. -47 d. -1

14. Solve for x:



a. $x = 840$ b. $x = 94$ c. $x = 73.38$ d. $x = 74$

15. Which number is the largest?

a. 10 b. $|2 - 11|$ c. $|-12|$ d. $-(-11)$

16. A rectangular room measures 10 ft by 12 ft. What is the area of the room in square meters? Round your answer to the nearest tenth. (Hint: 1 foot = 0.305 meters)

a. $120.0\ m^2$ b. $11.2\ m^2$ c. $36.6\ m^2$ d. $393.4\ m^2$

17. After arriving to a bowling alley, you notice that the bowling balls are labelled in kilograms. If the ball you have selected weighs 5.5 kg, how many pounds does the bowling ball weigh? (Hint: 1 kg = 2.20 lbs.)

a. 2.5 lbs. b. 7.7 lbs. c. 12.1 lbs. d. 10.5 lbs.

18. Solve for y: $-30x - 6y = 42$

a. $y = 5x + 7$ b. $y = -5x - 7$ c. $y = -5x + 42$ d. $y = -5x + 7$

19. Evaluate $2t^2 - 3t + 11$ for $t = -2$

a. 25 b. 9 c. -3 d. 13

20. Simplify: $-5(2s + 3t) + 2(s - t)$

a. $-s - 4t$ b. $-8s + 17t$ c. $-4s - 11t$ d. $-8s - 17t$

21. Simplify by combining like terms: $s^5t^3 + 4s^3t^5 + 7s^2t + 6s^5t^3 + 2s^2t$

a. $6s^5t^3 + 4s^3t^5 + 14s^2t$ b. $7s^{10}t^6 + 4s^3t^5 + 9s^4t^2$

c. $7s^5t^3 + 4s^3t^5 + 9s^2t$ d. $20s^{17}t^{13}$

22. Simplify: $(x^2 - 6x + 9) + (-3x^2 - 5x + 2)$

a. $4x^2 - x + 11$ b. $-2x^2 - 11x + 11$

c. $2x^2 - 11x + 11$ d. $-2x^4 - 11x^2 + 11$

23. Solve for n: $\frac{3n}{4} = -\frac{9}{2}$

a. $n = 6$ b. $n = -\frac{3}{8}$ c. $n = -216$ d. $n = -6$

24. Which of the following is a solution to the equation $3x + 5y = 20$?

a. $x = -5,\ y = -1$ b. $x = 5,\ y = 1$

c. $x = 1,\ y = 5$ d. None of these

25. Solve for q: $6q - 5 = 7 + 2q$

a. $q = 4$ b. $q = \frac{3}{2}$ c. $q = 3$ d. $q = \frac{1}{4}$

26. Solve for C: $13 - (2C + 2) = 2(C + 2) + 3C$

a. $C = \frac{11}{7}$ b. $C = 1$ c. $C = 5$ d. $C = -1$

27. 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. $x = 3$

28. Use the distributive property to simplify: $-9(3g - 7h)$

a. $-6g - 16h$ b. $-27g - 7h$ c. $-27g - 63h$ d. $-27g + 63h$

29. In which quadrant does the point $(2, -4)$ lie?

a. QI b. QII c. QIII d. QIV

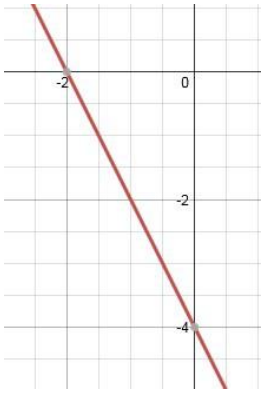
30. Find the slope of the line that goes through the points $(-2, 9)$ *and* $(1, -3)$.

Use the slope formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

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

31. Identify the correct graph for the given equation: $6x + 3y = 12$

a.



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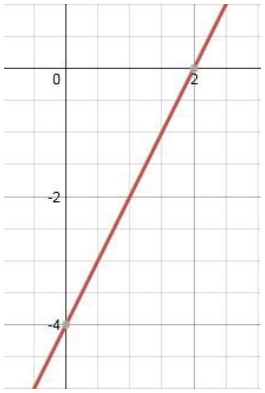

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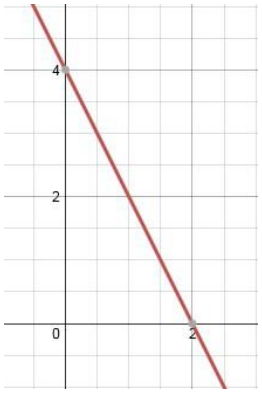
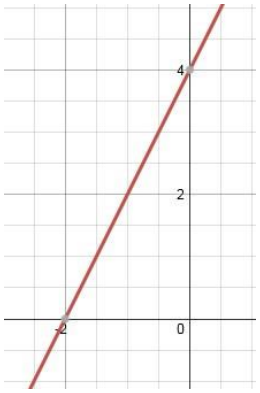


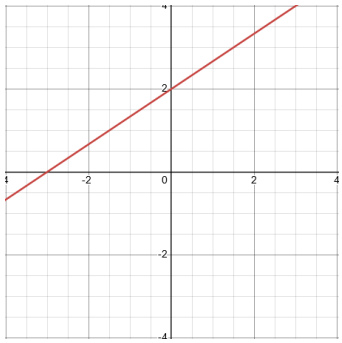
d.



32. Write the equation of a vertical line that goes through the given point: $(-4, 3)$

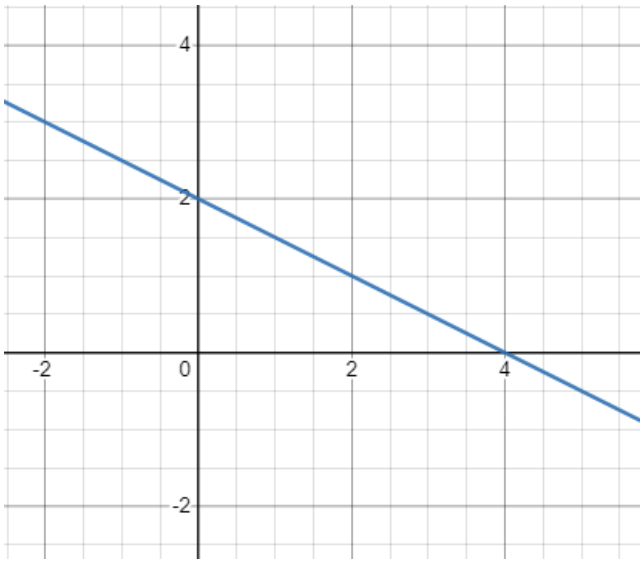
a. $y = -4$ b. $x = -4$ c. $y = 3$ d. $x = 3$

33. Which equation represents the given graph?



a. $y = \frac{2}{3}x + 2$ b. $y = \frac{3}{2}x - 2$ c. $y = \frac{2}{3}x - 2$ d. $y = \frac{3}{2}x + 2$

Use the following graph for problems 34 – 35.



34. Which equation represents the slope of the above graph?

a. $m = \frac{1}{2}$ b. $m = -2$ c. $m = 2$ d. $m = -\frac{1}{2}$

35. Identify the x and y intercepts of the above graph.

a. x: $(4,0)$ y: $(0,2)$ b. x: $(0,4)$ y: $(2,0)$ c. x: $(0,2)$ y: $(4,0)$ d. x: $(-4,0)$ y: $(0,-2)$

36. Find the x and y intercepts and the slope of the line represented by the equation:

$$y = -2x + 10$$

a. x: $(5,0)$ y: $(0,10)$ $m = 2$

b. x: $(5,0)$ y: $(0,10)$ $m = -2$

c. x: $(0,5)$ y: $(10,0)$ $m = -2$

d. x: $(-2,0)$ y: $(0,0)$ $m = 10$

37. Simplify: $(7)^{-1} + 7^0$

a. -6 b. $\frac{8}{7}$ c. -7 d. $\frac{1}{7}$

38. Simplify: $(-8mn^5)(2m^6n^2)$

a. $-16m^7n^7$ b. $-16m^6n^{10}$ c. $-6m^7n^7$ d. $-10m^6n^{10}$

39. Simplify: $(-3xy^2z^3)^3$

a. $-9x^3y^5z^6$ b. $27x^3y^6z^9$ c. $9x^3y^5z^6$ d. $-27x^3y^6z^9$

40. Simplify: $\frac{2r^6s^{-3}t^5}{10r^3s^3t^{-1}}$

a. $\frac{r^9t^4}{5}$ b. $\frac{r^3t^6}{5}$ c. $\frac{r^3t^6}{5s^6}$ d. $\frac{5r^3t^6}{s^6}$

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

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

42. Find the degree of the polynomial: $-2x^3 + 4x^2 - x + 6x^4 - 7$

a. Degree 3 b. Degree 4 c. Degree -2 d. Degree 6

43. Divide: $\frac{8a^2b^4 - 12ab^2}{4ab^2}$

a. $2ab^2 - 3$ b. $4ab^2 - 8$ c. $2a^3b^6 - 3a^2b^4$ d. $2ab^2 - 3ab$

44. Multiply: $(3t-4)(2t+1)$

a. $6t^2+11t-4$ b. $6t^2-t-4$

c. $6t^2-5t-4$ d. $6t^2+5t+4$

45. Write an equation of a line with a slope of $-\frac{5}{4}$ passing through the point (9,17):

a. $y=\frac{-5}{4}x+\frac{113}{4}$ b. $y=\frac{113}{4}x-\frac{5}{4}$ c. $y=\frac{5}{4}x+\frac{113}{4}$ d. $y=\frac{-5}{4}x-\frac{113}{4}$

46. Convert from decimal notation to scientific notation: 4,291,000

a. $4.291\ x\ 10^6$ b. $4.291\ x\ 10^{-6}$ c. $4{,}291.000\ x\ 10^3$ d. $42.91\ x\ 10^5$

47. Convert from scientific notation to decimal notation: $2.017\ x\ 10^{-4}$

a. 20,170 b. 0.2017 c. 20,170,000 d. 0.0002017

48. Write an equation of a line passing through the points (3,6) and (2,10):

a. $y=4x-18$ b. $y=-4x+18$ c. $y=4x+18$ d. $y=-4x-18$

49. What are the correct steps to graph the line $y=4x+3$?

a. 1st Graph (3,0)
2nd Go up 4, left 1

b. 1st Graph (0,3)
2nd Go up 4, right 1

c. 1st Graph (0,3)
2nd Go down 1, right 4

d. 1st Graph (3,0)
2nd Go up 4, right 1

50. A hedgehog weighs 736 grams. Convert this weight to kilograms:

a. 0.736 kg b. 7.36 kg c. 0.0.074 kg d. 736,000 kg

Answer Key

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