

## PRACTICE FOR MAT 0024 FINAL

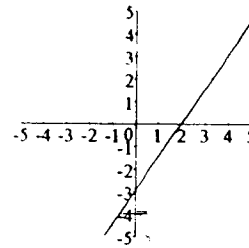
1. Give the equation of the graphed line:

a.)  $y = \frac{2}{3}x - 3$

b.)  $y = \frac{3}{2}x - 3$

c.)  $y = -\frac{2}{3}x - 3$

d.)  $y = -\frac{3}{2}x - 3$



2. Find the slope of the line given by:  $3x + 4y = 12$

a.)  $-\frac{3}{4}$

b.)  $\frac{3}{4}$

c.) -3

d.) 3

3. Find the x-intercept of the line given by:  $3x + 4y = 12$

a.)  $-\frac{3}{4}$

b.) (0,3)

c.) (4,0)

d.) (0.4)

4. The length a spring stretches varies directly as the force applied. If the length is 8 inches when the force is 10 pounds, find the force needed to stretch the spring to 20 inches.

a.) 4 pounds

b.) 1 pound

c.) 50 pounds

d.) 25 pounds

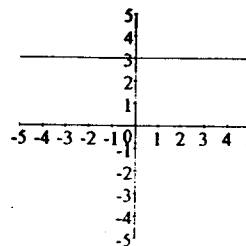
5. Give the equation of the graphed line:

a.)  $x = 3$

b.)  $x = y$

c.)  $y = 3$

d.)  $y = 3x$



6. Simplify:  $\frac{x^2 - 4x}{4 - x}$

a.)  $x$

b.)  $-x$

c.)  $x^2$

d.)  $\frac{x-4}{4}$

7. Simplify:  $(5x)^2(2x^3)$

a.)  $200x^5$

b.)  $10x^5$

c.)  $50x^6$

d.)  $50x^5$

8. Simplify:  $-4y^0$

a.)  $-4$

b.)  $0$

c.)  $1$

d.)  $4$

9. Simplify:  $\frac{3x^{-2}y^3}{21x^7y^{-3}}$

a.)  $\frac{y^6}{7x^5}$

b.)  $\frac{1}{7y^9}$

c.)  $\frac{y^6}{7x^9}$

d.)  $\frac{y^6}{18x^9}$

For problems 11 and 12, perform indicated operations.

10.  $(6x^2 - 3x - 7) - (2x^2 - x + 10)$

a.)  $4x^2 - 2x + 3$

b.)  $4x^2 - 2x - 17$

c.)  $4x^2 - 4x + 3$

d.)  $8x^2 - 4x + 3$

11.  $(2y + 3)(5y - 2)$

a.)  $10y^2 - 11y - 6$

b.)  $10y^2 + 19y - 6$

c.)  $10y^2 + 11 + 6$

d.)  $10y^2 + 11y - 6$

12. Simplify completely:  $\sqrt{18x^6y}$

a.)  $3x^2\sqrt{2x^2y}$

b.)  $9x^3\sqrt{2y}$

c.)  $3x^3\sqrt{2y}$

d.)  $3\sqrt{2x^6y}$

13. Simplify completely:  $\frac{3}{\sqrt{5}}$

a.)  $3$

b.)  $\frac{3\sqrt{5}}{25}$

c.)  $\frac{3\sqrt{5}}{5}$

d.)  $\frac{\sqrt{15}}{5}$

In problems (14) – (20), perform indicated operations. Simplify completely.

14.  $\sqrt{3}(2-\sqrt{5})$

a.)  $\sqrt{6}-\sqrt{15}$

b.)  $2\sqrt{3}-\sqrt{15}$

c.)  $2\sqrt{3}-\sqrt{5}$

d.)  $2\sqrt{3}-3\sqrt{5}$

15.  $(5-\sqrt{3})^2$

a.) 22

b.)  $28-10\sqrt{3}$

c.)  $22-10\sqrt{3}$

d.) 28

16.  $\sqrt{2}-4\sqrt{18}+\sqrt{3}$

a.)  $13\sqrt{2}+\sqrt{3}$

b.)  $-12\sqrt{5}$

c.)  $-12\sqrt{2}+\sqrt{3}$

d.)  $-11\sqrt{2}+\sqrt{3}$

17.  $\frac{7}{3x}+\frac{8}{3x}$

a.)  $\frac{5}{2x}$

b.)  $-\frac{1}{3x}$

c.)  $\frac{56}{9x^2}$

d.)  $\frac{5}{x}$

18.  $\frac{2t-3}{t+5}-\frac{4-4t}{t+5}$

a.)  $\frac{-2t-7}{t+5}$

b.)  $\frac{-2t}{2t+10}$

c.)  $\frac{6t-7}{2t+10}$

d.)  $\frac{6t-7}{t+5}$

19.  $\frac{a^2-4}{a^2} \cdot \frac{a^2-3a}{a^2-a-6}$

a.)  $\frac{(a+2)(a-3)}{a(a+3)}$

b.)  $\frac{a-2}{a}$

c.)  $\frac{a-2}{a^2}$

d.)  $\frac{(a-2)(a-2)}{a(a+2)}$

20.  $\frac{12a^3}{5b^3} \div 15a^5$

a.)  $\frac{4}{25a^4b^3}$

b.)  $\frac{36a^6}{b^3}$

c.)  $\frac{7}{75a^2}$

d.)  $\frac{25a^2b^3}{4}$

21. Write in scientific notation: 0.000094

a.)  $9.4 \times 10^5$

b.)  $94 \times 10^{-6}$

c.)  $9.4 \times 10^{-5}$

d.)  $94 \times 10^6$

22. Perform the indicated operation:  $(3.4 \times 10^7)(2 \times 10^{-9})$

a.)  $6.8 \times 10^{-2}$

b.)  $1.7 \times 10^{16}$

c.)  $6.8 \times 10^{16}$

d.)  $68 \times 10^{-2}$

23. Give the y-intercept for the line given by:  $2x - 4y = 8$

(a) (-2,0)

(b) (4,0)

(c) (0, 4)

(d) (0,-2)

24. The optimum heart rate is the rate that a person should achieve during exercise for the exercise to be most beneficial. The algebraic expression  $0.6(220 - a)$  describes a person's optimum heart rate in beats per minute, where  $a$  represents that person's age. Determine the optimum heart rate for a 20-year-old runner.

a) 12

b) 120

c) 1200

d) none of these

25. Compute:  $\frac{7}{8} + \frac{2}{3}$

a)  $\frac{7}{12}$

b)  $\frac{37}{24}$

c)  $\frac{9}{11}$

d)  $\frac{25}{12}$

26. Evaluate  $|x + 4y|$  when  $x = 2$  and  $y = -3$ .

a) -10

b) 3

c) 10

d) 14

27. Combine like terms:  $(3x^3 - 2x + 1) - (3x^3 + 3x - 3)$
- a) -1                      b) -x                      c)  $-5x + 4$                       d)  $5x^2 + 4$
28. Compute:  $-13.7 + 5$
- a) -8.7                      b) -13.2                      c) 8.7                      d) 13.2
29. Compute:  $15 - 9 + 6 - (-4)$
- a) 4                      b) 8                      c) 16                      d) 20
30. Compute:  $(3 - 4)^2$
- a) 1                      b) -2                      c) -7                      d) 49
31. Compute:  $\frac{5(-3)}{6-3}$
- a) -12                      b) -5                      c)  $\frac{2}{3}$                       d)  $\frac{5}{6}$
32. Solve:  $8x - 3 = 5x + 9$
- a) -4                      b)  $\frac{6}{13}$                       c) 2                      d) 4
33. Solve:  $-5x + 3(x + 2) = 16$
- a) -7                      b) -5                      c) 12                      d) 16

34. Solve:  $\frac{x}{5} - 3 = \frac{4}{5}$
- a) 1                      b) 7                      c) 11                      d) 19
35. Solve:  $3 - 6y > 27$
- a)  $y > -5$               b)  $y > -5$               c)  $y > -4$               d)  $y < -4$
36. Solve for m:  $R = 3m - x$
- a)  $\frac{R}{3} + x$               b)  $\frac{Rx}{3}$                       c)  $R + x - 3$               d)  $\frac{R+x}{3}$
37. Solve:  $x(x + 3) = 18$
- a) -9, 2                      b) -6, 3                      c) 6, -3                      d) 18, 15
38. Solve:  $x^3 - 4x = 0$
- a) -2, 2                      b) 0, 4                      c) 0, 1, 4                      d) 0, 2, -2
39. Simplify:  $-5^2 - (-2 + 10) \div 2$
- (a) 21                      (b) -29                      (c)  $\frac{17}{2}$                       (d) -21
40. Simplify:  $-|-8 + 5| + |-6|$
- (a) 19                      (b) 9                      (c) 3                      (d) -7

41. Translate to algebra: Three less than twice a number is equal to the quotient of the number and four.

a)  $3 - 2n = 4n$       b)  $n^2 - 3 = 4n$       c)  $n^2 - 3 = \frac{n}{4}$       d)  $2n - 3 = \frac{n}{4}$

42. Factor completely:  $x^2 - 16$

a)  $x(x - 16)$       b)  $(x + 2)(x - 8)$       c)  $(x + 4)(x - 4)$       d) prime

43. Find one of the factors of  $x^2 + 5x - 6$ .

a)  $x - 2$       b)  $x + 1$       c)  $x + 3$       d)  $x + 6$

44. Find one of the factors of  $3x^2 - 8x + 4$ .

a)  $3x + 2$       b)  $x - 4$       c)  $3x - 4$       d)  $3x - 2$

45. Factor completely:  $-4a^2b + 10a^2b^2 - 6ab^2$

(a)  $2ab(-2a + 5ab - 3b)$       (b)  $2a(-2ab + 5ab^2 - 3b^2)$   
(c)  $ab(-4a + 10ab - 6b)$       (d)  $2b(-2a^2b + 5a^2b - 3ab)$

46. Given that  $a = -2$  and  $b = 3$ , evaluate:  $8 - 2ab + 2a^2$

(a) 36      (b) 4      (c) 12      (d) 28

47. Simplify:  $\sqrt{45} - \sqrt{20}$

(a) 5      (b)  $5\sqrt{5}$       (c)  $\sqrt{5}$       (d)  $2\sqrt{10} - 2\sqrt{5}$

48. Identify the proportion that would solve this problem:

If 250 radios are manufactured in 8 hours, how many can be produced in 50 hours?

- (a)  $\frac{250}{r} = \frac{8}{50}$       (b)  $\frac{250}{r} = \frac{50}{8}$       (c)  $\frac{250}{50} = \frac{r}{8}$       (d)  $\frac{8}{r} = \frac{50}{250}$

49. Simplify:  $\left(\frac{3y^4}{x^3}\right)^2$

- a)  $\frac{9y^{16}}{x^9}$       b)  $\frac{3y^8}{x^6}$       c)  $\frac{9y^8}{x^6}$       d)  $\frac{9y^6}{x^5}$

50. Simplify:  $9 - 2(x - 4) + 1$

- (a)  $7x - 27$       (b)  $7x - 29$       (c)  $2 - 2x$       (d)  $18 - 2x$

51. Which of the following is equivalent to  $8y + 4x$ ?

- a)  $12xy$       b)  $8(y + 4x)$       c)  $4(2y + x)$       d)  $2y + x$

Handwritten answers for questions 26-51:

26 C, 27 C, 28 A, 29 C, 30 A, 31 B, 32 d, 33 B, 34 d, 35 d, 36 d, 37 B, 38 d, 39 B, 40 C, 41 d, 42 C, 43 d, 44 d, 45 A, 46 d, 47 C, 48 A, 49 C, 50 d, 51 C

1 B, 2 A, 3 C, 4 d, 5 C, 6 B, 7 d, 8 A, 9 C, 10 B, 11 d, 12 C, 13 C, 14 B, 15 B, 16 d, 17 d, 18 d, 19 B, 20 A, 21 C, 22 A, 23 d, 24 B, 25 B