

## Review for TEST 3 (B)

\_\_\_ 1. Given  $f(x) = \frac{x-6}{6x^2+7x+12}$ , find  $f(7)$ .

A)  $\frac{1}{355}$

\_\_\_ 2. Given  $f(x) = \frac{x-4}{x+8}$ , find  $f(-4)$ .

A)  $-2$

\_\_\_ 3. Find the domain of the following function:

$$h(x) = \frac{6x}{11x+121}$$

A)  $\{x \mid x \neq -11\}$

\_\_\_ 4. Find the domain of the following function:

$$q(x) = \frac{9x-1}{(x+10)(x-9)}$$

A)  $\{x \mid x \neq -10, 9\}$

\_\_\_ 5. Simplify:

$$\frac{x^2-64}{a(x+8)-b(x+8)}$$

A)  $\frac{x-8}{a-b}$

\_\_\_ 6. Given  $f(x) = \frac{1}{x^2-14x+49}$ , find  $f(-5)$ .

A)  $\frac{1}{144}$

\_\_\_ 7. Given  $f(x) = \frac{x^2-8x}{x^3-x+16}$ , find  $f(-1)$ .

A)  $\frac{9}{16}$

\_\_\_ 8. Find the domain of the following function:

$$f(x) = \frac{11}{x-12}$$

A)  $\{x \mid x \neq 12\}$

\_\_\_ 9. Find the domain of the following function:

$$q(x) = \frac{2-x}{(x-2)(5x-4)}$$

A)  $\left\{x \mid x \neq \frac{4}{5}, 2\right\}$

\_\_\_ 10. Find the domain of the following function:

$$f(x) = \frac{x+3}{x^2+9}$$

A)  $\{x \mid x \in \text{real numbers}\}$

\_\_\_ 11. Simplify:

$$\frac{3x^3y^3 - 21x^2y^2 + 15xy}{3xy}$$

A)  $x^2y^2 - 7xy + 5$

\_\_\_ 12. Simplify:

$$\frac{x^2y^2 + 6xy - 72}{x^2y^2 - 18xy + 72}$$

A)  $\frac{xy+12}{xy-12}$

\_\_\_ 13. Multiply:

$$\frac{x^2+8x+7}{x^3y^5} \cdot \frac{x^4y^4}{x^2+2x+1}$$

A)  $\frac{x(x+7)}{y(x+1)}$

\_\_\_ 14. Multiply:

$$\frac{2x^2 - 6x + 4}{x^2 - 5x + 4} \cdot \frac{x^2 - 6x + 8}{2x^2 - 10x + 12}$$

A)  $\frac{x-2}{x-3}$

\_\_\_ 15. Divide:

$$\frac{2x^6y^7}{4a^6b^6} \div \frac{2x^3y^5}{3a^3b^4}$$

A)  $\frac{3x^3y^2}{4a^3b^2}$

\_\_\_ 16. Divide:

$$\frac{-6 + 5x - x^2}{x^2 - 6x + 8} \div \frac{x^2 - 10x + 21}{x^2 - 7x + 12}$$

A)  $-\frac{x-3}{x-7}$

\_\_\_ 17. Simplify:

$$\frac{4}{3x} - \frac{5}{2xy} + \frac{4}{5xy} - \frac{7}{6x}$$

A)  $\frac{-51 + 5y}{30xy}$

\_\_\_ 18. Simplify:

$$\frac{w}{w^2 - 49} + \frac{7}{w - 7}$$

A)  $\frac{8w + 49}{(w - 7)(w + 7)}$

\_\_\_ 19. Simplify:

$$\frac{c}{c-4} + \frac{5}{c+5} - \frac{11c-8}{c^2+c-20}$$

A)  $\frac{c+3}{c+5}$

\_\_\_ 20. Multiply:

$$\frac{7x^6y^7}{5a^4b^3} \cdot \frac{3a^7b^5}{3x^2y^4}$$

A)  $\frac{7x^4y^3a^3b^2}{5}$

\_\_\_ 21. Multiply:

$$\frac{x^2 - 7x + 12}{x^2 - 9x + 20} \cdot \frac{x^2 - 8x + 15}{x^2 - 5x + 6}$$

A)  $\frac{x-3}{x-2}$

\_\_\_ 22. Simplify:

$$\frac{x^{2n} - 9x^n - 22}{x^{2n} + x^n - 2} \cdot \frac{x^{2n} - 5x^n - 6}{x^{2n} - 10x^n - 11}$$

A)  $\frac{x^n - 6}{x^n - 1}$

\_\_\_ 23. Divide:

$$\frac{x^2 - 3x + 2}{x^2 - 4x + 3} \div \frac{x^2 - 7x + 10}{x^2 - 5x + 6}$$

A)  $\frac{x-2}{x-5}$

\_\_\_ 24. Simplify:

$$\frac{16x^{2n} - 40x^n - 96}{x^{2n} - 3x^n - 4} \div \frac{2x^{2n} + x^n - 3}{x^{2n} - 1}$$

A) 8

\_\_\_ 25. Simplify:

$$\frac{7}{w-2} + \frac{5}{w+5}$$

A)  $\frac{12w+25}{(w-2)(w+5)}$

\_\_\_ 26. Simplify:

$$\frac{x+1}{x^2+x-20} - \frac{x+4}{x^2+6x+5}$$

A)  $\frac{2x+17}{(x+5)(x-4)(x+1)}$

\_\_\_ 27. Simplify:

$$\frac{3 - \frac{1}{5}}{6 + \frac{11}{5}}$$

A)  $\frac{14}{41}$

\_\_\_ 28. Simplify:

$$\frac{\frac{7}{a^2} - \frac{1}{a}}{\frac{7}{a^2} + \frac{1}{a}}$$

A)  $-\frac{a-7}{a+7}$

\_\_\_ 29. Simplify:

$$\frac{\frac{1}{y^2} - \frac{11}{xy} - \frac{12}{x^2}}{\frac{1}{y^2} - \frac{13}{xy} + \frac{12}{x^2}}$$

A)  $\frac{x+y}{x-y}$

\_\_\_ 30. Simplify:

$$\frac{1 + \frac{7}{x}}{1 - \frac{49}{x^2}}$$

A)  $\frac{x}{x-7}$

\_\_\_ 31. Simplify:

$$\frac{x-11}{x+11} - \frac{x+11}{x-11} - \frac{x+11}{x-11} + \frac{x+11}{x+11}$$

A)  $-\frac{22x}{x^2+121}$

\_\_\_ 32. Simplify:

$$a - \frac{a}{10 - \frac{a}{10-a}}$$

A)  $\frac{10a(9-a)}{100-11a}$

\_\_\_ 33. Simplify:  $(-4)^{3/2}$

A) Not a real number

\_\_\_ 34. Simplify:  $\frac{a^{-3/8}}{a^{1/3}}$

A)  $\frac{1}{a^{17/24}}$

\_\_\_ 35. Simplify:  $(x^{-1/5} \cdot x^{3/4})^{-5/3}$

A)  $\frac{1}{x^{11/12}}$

\_\_\_ 36. Simplify:  $\left(x^2 y^{\frac{1}{2}}\right)^{-2} (x^{-8} y^2)^{1/4}$

A)  $\frac{y^{3/2}}{x^6}$

\_\_\_ 37. Rewrite the following exponential expression as a radical expression:  $a^{10/7}$

A)  $\sqrt[7]{a^{10}}$

\_\_\_ 38. Rewrite the following exponential expression as a radical expression:  $(a^{10}b)^{10/11}$

A)  $\sqrt[11]{a^{100}b^{10}}$

\_\_\_ 39. Rewrite the following radical expression as an exponential expression:  $\sqrt[4]{x^5}$

A)  $x^{5/4}$

\_\_\_ 40. Rewrite the following radical expression as an exponential expression:  $\sqrt{a^2 - 8}$

A)  $(a^2 - 8)^{1/2}$

\_\_\_ 41. Simplify:  $\sqrt[3]{-64x^{15}y^9}$

A)  $-4x^5y^3$

\_\_\_ 42. Simplify:  $\sqrt[3]{27x^{30}}$

A)  $3x^{10}$

\_\_\_ 43. Simplify:  $x^{-5/6} \cdot x^{6/7}$

A)  $x^{1/42}$

\_\_\_ 44. Simplify:  $(x^{-7/4})^{28}$

A)  $\frac{1}{x^{49}}$

\_\_\_ 45. Simplify:  $(x^{-2/3}y^{1/3})^{-7/4}$

A)  $\frac{x^{7/6}}{y^{7/12}}$

\_\_\_ 46. Simplify:  $(49m^{-2}n^4)^{-1/2}(mn^{1/2})$

A)  $\frac{m^2}{7n^{3/2}}$

\_\_\_ 47. Simplify:  $y^{9/2}(y^{1/4} - y^{-1/12})$

A)  $y^{19/4} - y^{53/12}$

\_\_\_ 48. Rewrite the following exponential expression as a radical expression:  $(2v)^{5/2}$

A)  $\sqrt{32v^5}$

\_\_\_ 49. Rewrite the following exponential expression as a radical expression:  $(2x - 4)^{2/3}$

A)  $\sqrt[3]{(2x - 4)^2}$

\_\_\_ 50. Simplify:  $-\sqrt{x^{20}}$

A)  $-x^{10}$

\_\_\_ 51. Simplify:  $\sqrt{-64x^4y^2}$

A) Not a real number

\_\_\_ 52. Simplify:  $\sqrt[5]{-32a^{30}b^{25}}$

A)  $-2a^6b^5$

\_\_\_ 53. Simplify:  $\sqrt[3]{a^{16}b^8}$

A)  $a^5b^2\sqrt[3]{ab^2}$

\_\_\_ 54. Simplify:  $\sqrt[3]{x^2y}\sqrt[3]{81x^4y^2}$

A)  $3x^2y\sqrt[3]{3}$

\_\_\_ 55. Simplify:  $2\sqrt{10xy} \cdot 4\sqrt{5x^2y} \cdot 3\sqrt{8xy^2}$

A)  $480x^2y^2$

\_\_\_ 56. Simplify:  $\sqrt{\frac{x}{20}}$

A)  $\frac{\sqrt{5x}}{10}$



\_\_\_ 57. Simplify:  $\frac{5}{\sqrt[3]{9x^2}}$

A)  $\frac{5\sqrt[3]{3x}}{3x}$

\_\_\_ 58. Simplify:  $\frac{9\sqrt{x} - 10\sqrt{y}}{9\sqrt{x} - 8\sqrt{y}}$

A) None of the above

\_\_\_ 59. Simplify:  $\sqrt{a} - \sqrt{27a}$

A)  $\sqrt{a} - 3\sqrt{3a}$

\_\_\_ 60. Simplify:  $8a^4\sqrt[4]{16ab^5} + 3b^4\sqrt[4]{256a^5b}$

A)  $28ab^4\sqrt{ab}$

\_\_\_ 61. Simplify:  $\sqrt[4]{12ab^3}\sqrt[4]{4a^5b^2}$

A)  $2ab^4\sqrt[4]{3a^2b}$

\_\_\_ 62. Simplify:  $\sqrt[3]{2a^5b^4} \cdot \sqrt[3]{4a^6b^5} \cdot \sqrt[3]{8a^8b^9}$

A)  $4a^6b^6\sqrt[3]{a}$

\_\_\_ 63. Simplify:  $\frac{1}{\sqrt{32x}}$

A)  $\frac{\sqrt{2x}}{8x}$

\_\_\_ 64. Simplify:  $\frac{8}{\sqrt[3]{3}}$

A)  $\frac{8\sqrt[3]{9}}{3}$

\_\_\_ 65. Solve:

$$\frac{3}{x-2} = \frac{6}{x}$$

- A) -4   B)  $-\frac{4}{3}$    C)  $\frac{2}{3}$    D) 4   E) -5

\_\_\_ 66. Solve:

$$\frac{9}{3x-1} = \frac{9}{4x+1}$$

- A)  $-\frac{2}{7}$    B)  $\frac{2}{7}$    C) -2   D) 1   E) -1

\_\_\_ 67. A new machine can make 11,500 aluminum cans five times faster than an older machine. With both machines working, 11,500 cans be made in 15 h.

How long would it take the new machine, working alone, to make 11,500 cans?

- A) 16 h   B) 18 h   C) 15 h   D) 22 h   E) 19 h

\_\_\_ 68. The president of a company traveled 1700 mi by jet and 310 mi on a prop plane. The rate of the jet was four times the rate of the prop plane. The entire trip took a total of 5 h.

Find the rate of the jet plane.

- A) 588.00 mph   B) 593.00 mph   C) 589.00 mph   D) 587.00 mph   E) 597.00 mph

\_\_\_ 69. A plane can fly 190 mph in calm air. Flying with the wind, the plane can fly 1050 mi in the same amount of time it takes to fly 850 mi against the wind.

Find the rate of the wind.

- A) 21 mph   B) 25 mph   C) 20 mph   D) 28 mph   E) 29 mph

\_\_\_ 70. Solve:

$$\frac{2}{x-2} = \frac{5}{2x+6}$$

- A) 11   B)  $\frac{22}{9}$    C) 22   D)  $\frac{22}{7}$    E)  $\frac{1}{22}$

\_\_\_ 71. An exit poll survey showed that 7 out of every 8 voters cast a ballot in favor of an amendment to a city charter.

At this rate, how many voters voted in favor of the amendment if 16,000 people voted?

- A) 7466   B) 14,000   C) 18,285   D) 8533   E) 8000

- \_\_\_ 72. One and one-half ounces of a medication are required for a 160-pound adult. At the same rate, how many additional ounces of medication are required for a 208-pound adult?
- A) 1.9 additional oz   B) 1.2 additional oz   C) 0.45 additional oz   D) 0.7 additional oz   E) 0.4 additional oz
- \_\_\_ 73. The distance ( $d$ ) that a spring will stretch varies directly as the force ( $f$ ) applied to the spring. If a force of 12 lb is required to stretch a spring 2 in., what force is required to stretch the spring 4 in.?
- A) 26 lb   B) 6 lb   C) 0 lb   D) 24 lb   E) 27 lb
- \_\_\_ 74. The repulsive force ( $f$ ) between the north poles of two magnets is inversely proportional to the square of the distance ( $d$ ) between them. If the repulsive force is 30 lb when the distance is 8 in., find the repulsive force when the distance is 4 in.
- A) 15 lb   B) 60 lb   C) 120 lb   D) 7 lb   E) 135 lb

## Answer Key

1. *(No Answer Provided)*
2. *(No Answer Provided)*
3. *(No Answer Provided)*
4. *(No Answer Provided)*
5. A
6. *(No Answer Provided)*
7. *(No Answer Provided)*
8. *(No Answer Provided)*
9. A
10. *(No Answer Provided)*
11. A
12. *(No Answer Provided)*
13. *(No Answer Provided)*
14. *(No Answer Provided)*
15. *(No Answer Provided)*
16. *(No Answer Provided)*
17. A
18. *(No Answer Provided)*
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23. *(No Answer Provided)*
24. *(No Answer Provided)*
25. *(No Answer Provided)*
26. A
27. *(No Answer Provided)*
28. *(No Answer Provided)*
29. A
30. *(No Answer Provided)*
31. *(No Answer Provided)*
32. A
33. *(No Answer Provided)*
34. *(No Answer Provided)*
35. *(No Answer Provided)*
36. *(No Answer Provided)*
37. A
38. *(No Answer Provided)*
39. *(No Answer Provided)*
40. *(No Answer Provided)*
41. *(No Answer Provided)*
42. A
43. A
44. *(No Answer Provided)*
45. A
46. *(No Answer Provided)*
47. *(No Answer Provided)*
48. A
49. A
50. A
51. *(No Answer Provided)*
52. *(No Answer Provided)*
53. A
54. *(No Answer Provided)*
55. A
56. *(No Answer Provided)*

- 57. *(No Answer Provided)*
- 58. *(No Answer Provided)*
- 59. A
- 60. *(No Answer Provided)*
- 61. *(No Answer Provided)*
- 62. *(No Answer Provided)*
- 63. *(No Answer Provided)*
- 64. *(No Answer Provided)*
- 65. D
- 66. C
- 67. B
- 68. A
- 69. C
- 70. C
- 71. B
- 72. C
- 73. D
- 74. C