

## College Algebra -- Test One -- Practice

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Find the distance between  $-\frac{3}{7}$  and  $\frac{5}{6}$  on the real number line.

2. Evaluate the expression  $-(2x+9)$  for  $x=5$ .

3. Write the following exponential expression in simplest form.

$$\frac{10z^{10}p^{15}}{14z^{12}p^7}$$

4. Simplify the expression  $\left(\frac{-9s^7t^{-2}}{9s^5t}\right)^{-2}$  and write it using positive exponents. Assume that all variables represent nonzero numbers.

5. Simplify the expression  $(x^4y^5)^{-1/4}$  and write with positive exponents. Assume that all variables represent positive real numbers.

6. Perform the operation and express your answer as a single polynomial in descending order.

$$(7x^4 + 5) - (6x^4 + 7x - 7)$$

7. Perform the given operations. Express your answer as a single polynomial in descending order.

$$(3t^5 + 2t^4 - 5) + (-6t^6 + 3t^3) + (3t^4 - 6t^3 - 2)$$

8. Multiply.

$$(4x - 6)(6x + 2)$$

9. Find the special product.

$$(-8x - 3)^2$$

10. Find the special product.

$$(7x - 8)^2$$

11. Evaluate  $g(a+h)$  for the following function.

$$g(x) = -x^2 - 4x + 7$$

A)  $g(a+h) = -a^2 - h^2 - 4a - 4h + 7$

B)  $g(a+h) = -a^2 - 2ah - h^2 - 4a - 4h + 7$

C)  $g(a+h) = a^2 + 2ah + h^2 - 4a - 4h + 7$

D)  $g(a+h) = a^2 + h^2 - 4a - 4h + 7$

E)  $g(a+h) = a^2 + 2ah + h^2 - 4a + 4h + 7$

12. Factor the difference of two squares.

$$49s^2 - 4$$

13. Factor out the common factor.

$$12u^4 + 3u^3 + 12u^2$$

14. Factor the trinomial.

$$t^2 + 2t - 24$$

15. Simplify the following rational expression.

$$\left( \frac{3t^3}{-4u^6} \right) \left( \frac{-3u^3}{t^6} \right)$$

16. Subtract  $\frac{z}{z-4} - \frac{z-1}{z^2-8z+16}$ . Express your answer in lowest terms.

17. Factor the trinomial.

$$12m^2 - 5m - 25$$

18. Completely factor the expression.

$$2v^2 - 50$$

19. Completely factor the expression.

$$3v^3 + 3$$

20. Factor the trinomial.

$$v^2 - 4v - 21$$

21. Completely factor the expression.

$$-20q^3 - 57q^2 - 40q$$

22. Simplify the complex fraction  $\frac{\frac{3}{x} + \frac{3}{y}}{\frac{2}{y^2} - \frac{4}{x}}$ .

23. Simplify the following algebraic fraction. Write the answer with positive exponents.

$$\frac{u^{-3} + v^{-4}}{u - v}$$

24. Simplify the complex fraction  $\frac{\frac{6a}{a^2 - b^2} + \frac{b}{a + b}}{\frac{3}{a - b}}$ .

25. Find the perimeter of a parallelogram with side lengths of 9 centimeters and 3 centimeters.

26. If a right triangle has legs of lengths 108 and 45, what is the length of the hypotenuse?

27. Solve the equation below.

$$-4x + 4 = 52$$

28. Solve the following equation.

$$9(-12p - 25) = -7(-35p - 32)$$

29. Solve the equation  $\frac{1}{2} + \frac{x}{7} = \frac{9}{14}$ .

30. Solve the equation  $0.6(x-1) + 1 = 0.7x$ .

31. Solve the equation  $-12x + 4y = 16$  for  $y$  in terms of  $x$ .

32. Solve the equation  $3x + y - 4 = 0$  for  $y$  in terms of  $x$ .

33. Evaluate the function at the specified value of the independent variable and simplify.

$$q(s) = 7s + 9$$

$$q(-0.4)$$

34. Evaluate  $f(-x)$  for the following function.

$$f(x) = 2x^2$$

35. Find the domain and range of the function  $f(t) = \frac{5}{x^2 - 16}$ .

36. Determine the domain and range of the following function.

$$f(x) = -2x + 8.5$$

37. Find the domain and range of the function.

$$g(x) = \sqrt{1-x^2}$$

## Answer Key

1.  $\frac{53}{42}$
2.  $-19$
3.  $\frac{5p^8}{7z^2}$
4.  $\frac{t^6}{s^4}$
5.  $\frac{1}{xy^{5/4}}$
6.  $x^4 - 7x + 12$
7.  $-6t^6 + 3t^5 + 5t^4 - 3t^3 - 7$
8.  $24x^2 - 28x - 12$
9.  $64x^2 + 48x + 9$
10.  $49x^2 - 112x + 64$
11. B
12.  $(7s + 2)(7s - 2)$
13.  $3u^2(4u^2 + u + 4)$
14.  $(t - 4)(t + 6)$
15.  $\frac{9}{4t^3u^3}$
16.  $\frac{z^2 - 5z - 1}{(z - 4)^2}$
17.  $(3m - 5)(4m + 5)$
18.  $2(v + 5)(v - 5)$
19.  $3(v + 1)(v^2 - v + 1)$
20.  $(v + 3)(v - 7)$
21.  $-q(4q + 5)(5q + 8)$
22.  $\frac{3y(x + y)}{2(x - 2y^2)}$
23.  $\frac{v^4 + u^3}{u^3v^4(u - v)}$
24.  $\frac{6a + ab - b^2}{3(a + b)}$
25. 24 cm
26. 117
27.  $-12$
28.  $-\frac{449}{353}$
29.  $x = 1$

30.  $x=4$

31.  $y=4+3x$

32.  $y=4-3x$

33. 6.2

34.  $f(-x)=2x^2$

35.  $(-\infty, -4) \cup (-4, 4) \cup (4, \infty)$

36.  $(-\infty, \infty)$

37.  $-1 \leq x \leq 1$