

1. Find the product.

$$(3x - 5z)(3x + 5z)$$

$$(3x - 5z)(3x + 5z) = \square$$

2. Factor the trinomial completely. If the trinomial contains a greatest common factor (other than 1), factor out the GCF first.

$$x^2 - x - 72$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $x^2 - x - 72 = \square$ (Factor completely.)

B. The polynomial is prime.

3. Solve the equation.

$$16x^2 - 25 = 0$$

$$x = \square$$

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

4. Simplify the expression.

$$(2x)^0$$

$$(2x)^0 = \square$$

5. Factor completely.

$$49x^2 - 28xy + 4y^2$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $49x^2 - 28xy + 4y^2 = \square$ (Factor completely.)

B. The polynomial is prime.

6. Perform the division.

$$\frac{17x^7 + 8x^4}{x}$$

$$\frac{17x^7 + 8x^4}{x} = \square \text{ (Simplify your answer.)}$$

7. Factor the polynomial by grouping.

$$12x^2 - 25x + 12$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $12x^2 - 25x + 12 = \square$ (Factor completely.)

B. The polynomial is prime.

8. Factor the following sum of two cubes.

$$m^3 + 27n^3$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $m^3 + 27n^3 = \square$ (Factor completely. Simplify your answer.)

B. The polynomial is prime.

9. Factor the four-term polynomial by grouping.

$$8x^3 - 6x^2 + 12x - 9$$

$$8x^3 - 6x^2 + 12x - 9 = \square \text{ (Factor completely.)}$$

10. Factor the trinomial completely.

$$a^2 - 13ab + 40b^2$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $a^2 - 13ab + 40b^2 = \square$ (Factor completely.)

B. The polynomial is prime.

11. Evaluate the expression using exponential rules. Write the result in standard notation.

$$(4 \times 10^{-3})(9 \times 10^{-5})$$

$$(4 \times 10^{-3})(9 \times 10^{-5}) = \square$$

12. Perform the indicated operation.

Subtract $(8x + 6)$ from $(5x^2 + 2x + 7)$.

$$(8x + 6) \text{ subtracted from } (5x^2 + 2x + 7) \text{ is } \square.$$

13. Multiply.

$$(x + 12)^2$$

The answer is \square .

(Simplify your answer.)

14. Find the following product.

$$(9y - 3)^3$$

$$(9y - 3)^3 = \square$$

15. Use the product rule to simplify the expression. Write the result using exponents.

$$(-3x^4y^4)(9xy^4)$$

$$(-3x^4y^4)(9xy^4) = \square$$

16. Find the quotient using long division.

$$\frac{6x^2 + 21x + 6}{2x + 5}$$

$$\frac{6x^2 + 21x + 6}{2x + 5} = \square$$

17. An object is thrown upward from the top of a 144-foot building with an initial velocity of 128 feet per second. The height h of the object after t seconds is given by the quadratic equation $h = -16t^2 + 128t + 144$. When will the object hit the ground?

The object will hit the ground at when the time is seconds.

18. Simplify the following expression. Write the result using positive exponents only.

$$\frac{-25a^9b}{5ab^6}$$

$$\frac{-25a^9b}{5ab^6} = \text{} \text{ (Simplify your answer.)}$$

19. Find the dimensions of a rectangle whose width is 5 miles less than its length, and whose area is 104 square miles.

The length of the rectangle is miles.

The width of the rectangle is miles.

20. Multiply.

$$(x + 2)(x^3 - 4x + 3)$$

$$(x + 2)(x^3 - 4x + 3) = \text{}$$

21. Add.

$$(-5y^2 - 5y) + (8y^2 + y - 4)$$

$$(-5y^2 - 5y) + (8y^2 + y - 4) = \text{} \text{ (Do not factor.)}$$

22. Simplify the expression. Write the result using positive exponents only.

$$\left(\frac{a^{-4}b}{ab^3}\right)^{-4}$$

$$\left(\frac{a^{-4}b}{ab^3}\right)^{-4} = \text{}$$

1. $9x^2 - 25z^2$

2. A, $(x + 8)(x - 9)$

3. $\frac{5}{4}, -\frac{5}{4}$

4. 1

5. A, $(7x - 2y)^2$

6. $17x^6 + 8x^3$

7. A, $(4x - 3)(3x - 4)$

8. A, $(m + 3n)(m^2 - 3mn + 9n^2)$

9. $(4x - 3)(2x^2 + 3)$

10. A, $(a - 5b)(a - 8b)$

11. 0.00000036

12. $5x^2 - 6x + 1$

13. $x^2 + 24x + 144$

14. $729y^3 - 729y^2 + 243y - 27$

15. $-27x^5y^8$

16. $3x + 3 - \frac{9}{2x + 5}$

17. 9

18. $-\frac{5a^8}{b^5}$

19. $\frac{13}{8}$

20. $x^4 + 2x^3 - 4x^2 - 5x + 6$

21. $3y^2 - 4y - 4$

22. $a^{20}b^8$