

1. Rewrite the expression without using negative exponents. Assume that the variable represents a nonzero real number.

$$-7x^{-19}$$

$$-7x^{-19} = -\frac{7}{x^{19}} \quad (\text{Simplify your answer.})$$

2. Identify the coefficient of each term of the polynomial.

$$-6x^2 + 4x + 2$$

The coefficient of the first term is -6 .

The coefficient of the second term is 4 .

The coefficient of the third term is 2 .

3. Identify the given polynomial as a monomial, binomial, or trinomial.

$$-57x^4$$

This given polynomial is a monomial.

4. Add the polynomials.

$$(2x^2 + 7x - 7) + (5x^2 - 8x - 13)$$

$$(2x^2 + 7x - 7) + (5x^2 - 8x - 13) = 7x^2 - x - 20 \quad (\text{Simplify your answer.})$$

5. Subtract.

$$(a^3b^2 + 18a^5b + 24a^2b^3) - (15a^2b^3 - 2a^5b + 16a^3b^2)$$

The difference is $20a^5b - 15a^3b^2 + 9a^2b^3$. (Simplify your answer. Do not factor.)

6. Multiply.

$$2x^5y^2(x^2 - 7xy - 9y^2)$$

$$2x^5y^2(x^2 - 7xy - 9y^2) = 2x^7y^2 - 14x^6y^3 - 18x^5y^4 \quad (\text{Simplify your answer.})$$

7. Multiply $(7x + 2)(x - 9)$.

$$(7x + 2)(x - 9) = 7x^2 - 61x - 18 \quad (\text{Simplify your answer.})$$

8. Multiply.

$$(x^2 + x - 1)(x^2 + 6x - 8)$$

$$(x^2 + x - 1)(x^2 + 6x - 8) = x^4 + 7x^3 - 3x^2 - 14x + 8$$

(Simplify your answer.)

9. Multiply.

$$(3x - 8)(3x + 8)$$

$$(3x - 8)(3x + 8) = \boxed{9x^2 - 64} \text{ (Simplify your answer.)}$$

10. Factor out the GCF from the following polynomial.

$$12w^3 - 42w^2$$

$$12w^3 - 42w^2 = \boxed{6w^2(2w - 7)}$$

11. Factor the GCF out of the given expression.

$$24p^6q + 42p^5q^4 + 30p^3q^2$$

$$24p^6q + 42p^5q^4 + 30p^3q^2 = \boxed{6p^3q(4p^3 + 7p^2q^3 + 5q)}$$

12. Factor completely.

$$b^2 + b + 8$$

Select the correct choice below and fill in any answer boxes within your choice.

☐ A. $b^2 + b + 8 = \boxed{}$

☒ B. The expression is prime.

13. Factor completely.

$$s^2 - 7s + 12$$

Select the correct choice below and fill in any answer boxes within your choice.

☒ A. The answer is $\boxed{(s - 3)(s - 4)}$.

☐ B. The expression is prime.

14. Factor completely.

$$4w^2 + 20w + 21$$

$$4w^2 + 20w + 21 = \boxed{(2w + 3)(2w + 7)}$$

15. Factor completely. If the polynomial is prime, so state.

$$25x^2 - 35x - 30$$

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

☒ $25x^2 - 35x - 30 = \boxed{5(x - 2)(5x + 3)}$

☐ The polynomial is prime.

16. Factor.

$$u^2 - 2u - u + 2$$

$$u^2 - 2u - u + 2 = \boxed{(u - 2)(u - 1)}$$

17. Factor the following polynomial by grouping.

$$3x^2 + 18x + x + 6$$

$$3x^2 + 18x + x + 6 = (3x + 1)(x + 6) \text{ (Factor completely.)}$$

18. Factor completely.

$$a^2 - 72$$

Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A. $a^2 - 72 =$
- ☒ B. The expression is prime.

19. Solve.

$$b^2 + 12b + 35 = 0$$

The solution set is $\{-7, -5\}$.
(Simplify your answer. Type an exact answer, using radicals and i as needed. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)

20. Solve.

$$2t^2 + 10t - 48 = 0$$

The solution set is $\{-8, 3\}$.
(Simplify your answer. Type an exact answer, using radicals and i as needed. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)

21. Solve the quadratic equation by completing the square.

$$x^2 - 18x - 4 = 0$$

The solution set is $\{9 - \sqrt{85}, 9 + \sqrt{85}\}$.
(Simplify your answer. Type an exact answer, using radicals and i as needed. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)

22. Solve by completing the square.

$$t^2 - 7t - 7 = 0$$

The solution set is $\left\{\frac{7 - \sqrt{77}}{2}, \frac{7 + \sqrt{77}}{2}\right\}$.
(Simplify your answer. Type an exact answer, using radicals and i as needed. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)

23. Solve by using the quadratic formula.

$$x^2 - 3x - 18 = 0$$

The solution set is $\{-3, 6\}$.
(Simplify your answer. Type an exact answer, using radicals and i as needed. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)

24. Solve by using the quadratic formula.

$$4x^2 + x - 5 = 0$$

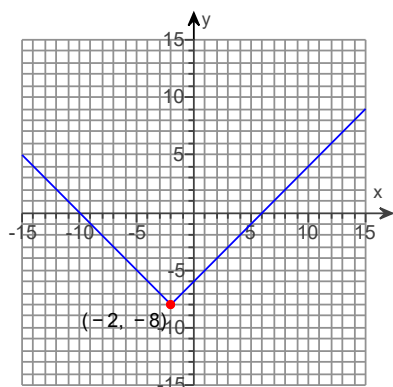
The solution set is $\left\{-\frac{5}{4}, 1\right\}$.
(Simplify your answer. Type an exact answer, using radicals and i as needed. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)

25. Evaluate the function at the given value.

$$f(x) = x + 9, f(-19)$$

$f(-19) =$ (Simplify your answer.)

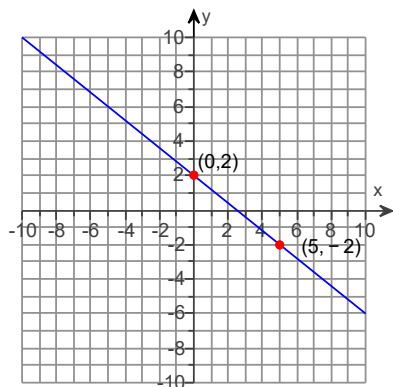
26. Find the domain and range of the function that has been graphed.



The domain of the function is .
(Type your answer in interval notation.)

The range of the function is .
(Type your answer in interval notation.)

27. Find the domain and range of the function that has been graphed.



The domain of the function is .
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The range of the function is .
(Type your answer in interval notation.)