

Read each question carefully. You must show all of your work in order to earn full credit. Partial credit will be awarded for legible mathematically-correct progress even when the final answer is not correct. Circle your final answers for 11-20. Print letter answers NEATLY for 1-10 (if I can't read it, you don't get credit).

Part I (1 point each)

*note that some answer choices will not be used at all, but none will be used more than once

___ 1. $a^2 - b^2$

___ 2. $a^3 - b^3$

___ 3. $a^3 + b^3$

___ 4. $a^2 + 2ab + b^2$

___ 5. $a^2 - 2ab + b^2$

___ 6. $x^m x^n$

___ 7. $(x^m)^n$

___ 8. $\frac{x^m}{x^n}$

___ 9. x^0

___ 10. x^{-n}

A. $(a - b)^2$

B. $(a - b)(a^2 + 2ab + b^2)$

C. x^{n-m}

D. $(a - b)(a + b)$

E. 1

F. $\frac{1}{x^n}$

G. $(a + b)(a^2 - ab + b^2)$

H. 0

I. $(a + b)^2$

J. $(a + b)(a^2 - 2ab + b^2)$

K. x^{m-n}

L. x^{m+n}

M. $(a - b)^3$

N. $(a - b)(a^2 + ab + b^2)$

O. $(a + b)^3$

P. x^{mn}

Part II (9 points each)

11. Solve the system of equations.

$$\begin{cases} 3x + y = 7 \\ x + 2y = 4 \end{cases}$$

12. Simplify the exponential expression.

$$\left(\frac{x^{-3}y^{-4}}{x^{-2}y} \right)^{-2}$$

13. Write in scientific notation.

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14. If the function is a polynomial, identify the lead term, leading coefficient, degree, and constant term.

$$f(x) = -7x^5 + 12x^4 - 5x^2 + 3x - 9$$

lead term:

leading coefficient:

degree:

constant term:

15. Evaluate the polynomial for the given value.

$P(x) = -3x^2 - 2x + 8$, evaluate $P(-1)$.

16. Multiply the polynomials and simplify.

$(2b^2 - 3)(3b^2 - 3b + 6)$

17. Divide the polynomials. Give the quotient and the remainder.

$(x^3 - 6x^2 + 11x - 6) \div (x - 3)$

quotient:

remainder:

18. Completely factor the polynomial.

$6x^4 - 10x^3 - 4x^2$

19. Completely factor the polynomial.

$$3b^5 - 24b^2$$

20. Solve the equation for x.

$$(x + 5)(x - 7) = -20$$