

Division of Polynomials; Rational Expressions

EXAMPLES

Find the quotient of $(6x^3 \div 2x^2)$.

$$6x^3 \div 2x^2 = \frac{6x^3}{2x^2} = \frac{\cancel{2}(3)(x)(x)(x)}{\cancel{2}(x)(x)} = 3x$$

Find the quotient of $(x^3 - y^3) \div (x - y)$.

Factor the numerator; then look for common factors.

$$\frac{\cancel{(x-y)}(x^2 + xy + y^2)}{\cancel{(x-y)}} = x^2 + xy + y^2$$

Directions Divide.

1. $7x^3 \div x$ _____
2. $(4x^2 - x) \div x$ _____
3. $(15x^4 + 3x^3) \div 3x$ _____
4. $(18x^5 - 6x^2) \div 2x^2$ _____
5. $(x + y)^5 \div (x + y)^3$ _____
6. $(6x - 4)^6 \div (6x - 4)^3$ _____
7. $(x^2 + 4xy + 4y^2) \div (x + 2y)$ _____
8. $(4x^2 - 20x + 25) \div (2x - 5)$ _____
9. $(9x^2 + 24xy + 16y^2) \div (3x + 4y)$ _____
10. $(x^3 + y^3) \div (x + y)$ _____
11. $(8x^3 - 27) \div (2x - 3)$ _____
12. $(64x^3 + y^3) \div (4x + y)$ _____
13. $(16x^2 - 4y^2) \div (4x + 2y)$ _____
14. $(25 - 100y^2) \div (5 - 10y)$ _____
15. $(8x^3 + 8y^3) \div (4x^2 - 4xy + 4y^2)$ _____