

Topic: Dividing multivariable polynomials**Question:** Find the quotient.

$$\frac{x^3 + y^3}{x + y}$$

Answer choices:

- A $x^2 + xy + y^2$
- B $x^2 - xy - y^2$
- C $x^2 - xy + y^2$
- D $x^2 + 2xy + y^2$



Solution: C

If we use long division to find the quotient, we get

$$\begin{array}{r}
 x^2 - xy + y^2 \\
 x+y \overline{) x^3 + 0x^2y + 0xy^2 + y^3} \\
 \underline{-(x^3 + x^2y)} \\
 -x^2y + 0xy^2 \\
 \underline{-(-x^2y - xy^2)} \\
 xy^2 + y^3 \\
 \underline{-(xy^2 + y^3)} \\
 0
 \end{array}$$



Topic: Dividing multivariable polynomials**Question:** Find the quotient.

$$\frac{2x^3 + 15yx^2 + 24y^2x - 16y^3}{x + 4y}$$

Answer choices:

- A $2x^2 + 7xy - 4y^2$
- B $2x^2 - 5xy - 4y^2$
- C $2x^2 + 3xy - 4y^2$
- D $2x^2 - 4xy - 4y^2$



Solution: A

If we use long division to find the quotient, we get

$$\begin{array}{r}
 2x^2 + 7xy - 4y^2 \\
 x+4y \overline{) 2x^3 + 15yx^2 + 24y^2x - 16y^3} \\
 \underline{-(2x^3 + 8yx^2)} \\
 7yx^2 + 24y^2x \\
 \underline{-(7yx^2 + 28y^2x)} \\
 -4y^2x - 16y^3 \\
 \underline{-(-4y^2x - 16y^3)} \\
 0
 \end{array}$$



Topic: Dividing multivariable polynomials**Question:** Find the quotient.

$$\frac{3x^3 - 7x^2y - 7xy^2 + 3y^3}{x - 3y}$$

Answer choices:

- A $3x^2 + 2xy - 3y^2$
- B $3x^2 - 2xy - 3y^2$
- C $3x^2 - 2xy + y^2$
- D $3x^2 + 2xy - y^2$



Solution: D

If we use long division to find the quotient, we get

$$\begin{array}{r}
 3x^2 + 2xy - y^2 \\
 x - 3y \overline{) 3x^3 - 7x^2y - 7xy^2 + 3y^3} \\
 \underline{-(3x^3 - 9x^2y)} \\
 2x^2y - 7xy^2 \\
 \underline{-(2x^2y - 6xy^2)} \\
 -xy^2 + 3y^3 \\
 \underline{-(-xy^2 + 3y^3)} \\
 0
 \end{array}$$

