

**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

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



**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

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



**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

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

