

**Topic:** Long division of polynomials**Question:** Find the quotient.

$$\frac{x^2 - 26}{x - 5}$$

**Answer choices:**

A  $x + 5 + \frac{1}{x - 5}$

B  $x + 5 - \frac{1}{x + 5}$

C  $x + 5 + \frac{1}{x + 5}$

D  $x + 5 - \frac{1}{x - 5}$



**Solution: D**

Using long division,

$$\begin{array}{r}
 x+5-\frac{1}{x-5} \\
 x-5 \overline{) x^2+0x-26} \\
 \underline{-(x^2-5x)} \phantom{-26} \\
 5x-26 \\
 \underline{-(5x-25)} \\
 -1
 \end{array}$$

the quotient is

$$x+5-\frac{1}{x-5}$$



**Topic:** Long division of polynomials**Question:** Find the quotient.

$$\frac{12x^3 - 11x^2 + 9x + 18}{4x + 3}$$

**Answer choices:**

A  $3x^2 - 5x + 6$

B  $3x^2 + 5x + 6$

C  $3x^2 + 5x - 6$

D  $3x^2 - 5x - 6$



Solution: A

Using long division,

$$\begin{array}{r} 3x^2 - 5x + 6 \\ 4x + 3 \overline{) 12x^3 - 11x^2 + 9x + 18} \\ \underline{-(12x^3 + 9x^2)} \phantom{+ 18} \\ -20x^2 + 9x \phantom{+ 18} \\ \underline{-(-20x^2 - 15x)} \phantom{+ 18} \\ 24x + 18 \\ \underline{-(24x + 18)} \\ 0 \end{array}$$

the quotient is

$$3x^2 - 5x + 6$$



**Topic:** Long division of polynomials**Question:** Find the quotient.

$$\frac{x^3 + 7x^2 + 14x + 3}{x + 2}$$

**Answer choices:**

A  $x^2 + 5x - 4 - \frac{5}{x + 2}$

B  $x^2 + 5x - 4 + \frac{11}{x + 2}$

C  $x^2 + 5x + 4 - \frac{5}{x + 2}$

D  $x^2 + 9x + 8 - \frac{5}{x + 2}$



**Solution: C**

Using long division,

$$\begin{array}{r}
 x^2 + 5x + 4 - \frac{5}{x+2} \\
 x+2 \overline{) x^3 + 7x^2 + 14x + 3} \\
 \underline{-(x^3 + 2x^2)} \phantom{+ 3} \\
 5x^2 + 14x \phantom{+ 3} \\
 \underline{-(5x^2 + 10x)} \phantom{+ 3} \\
 4x + 3 \phantom{+ 3} \\
 \underline{-(4x + 8)} \\
 -5
 \end{array}$$

the quotient is

$$x^2 + 5x + 4 - \frac{5}{x+2}$$

