Topic: Long division of polynomials

Question: Find the quotient.

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

Answer choices:

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

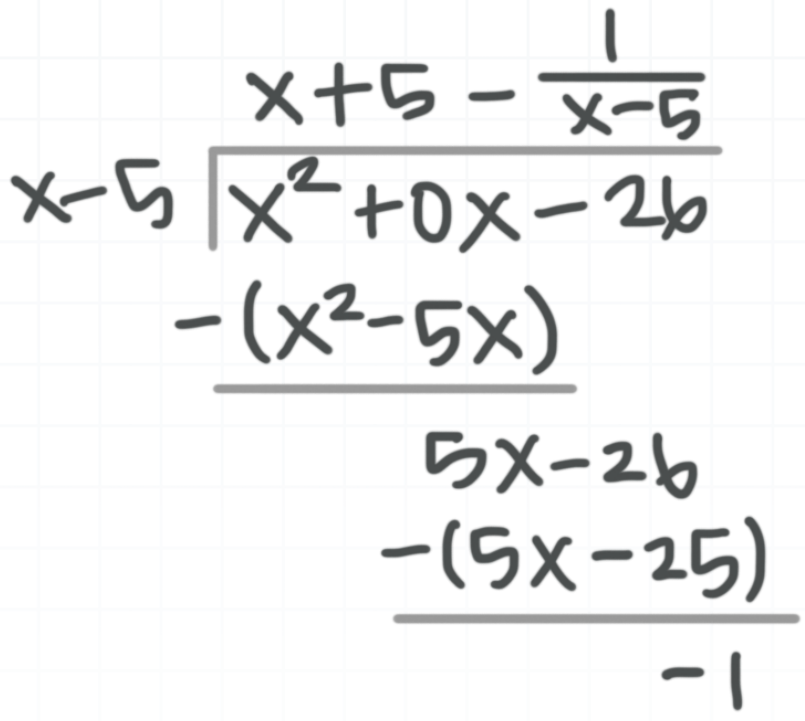
B $x + 5 - \frac{1}{x + 5}$

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

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

Solution: D

Using long division,



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,

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

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,

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

the quotient is

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