

**Topic:** Dividing polynomials**Question:** Simplify the expression.

$$(x^2 + x + 8) \div (x - 1)$$

**Answer choices:**

A  $x + \frac{8}{x - 1}$

B  $x^2 + x + 4$

C  $x^2$

D  $x + 2 + \frac{10}{x - 1}$



**Solution: D**

We'll use polynomial long division.

$$\begin{array}{r}
 \phantom{X-1} \overline{X \phantom{+} 2 \phantom{+} 0} \text{ R } 10 \\
 X-1 \overline{) x^2 + x + 8} \\
 \underline{-(x^2 - x)} \phantom{+ 8} \quad \downarrow \\
 \phantom{X-1} 2x + 8 \\
 \underline{-(2x - 2)} \\
 \phantom{X-1} 10
 \end{array}$$



**Topic:** Dividing polynomials**Question:** Simplify the expression.

$$(x^3 + 2x^2 + 12) \div (x - 1)$$

**Answer choices:**

A  $2x^2 + 4x + 4$

B  $x^2 + 3x + 3 + \frac{15}{x - 1}$

C  $x^2 - 3x - 3 + \frac{15}{x - 1}$

D  $x^2 + 3x - 3 + \frac{14}{x - 1}$



**Solution: B**

We'll use polynomial long division, making sure that we put in a placeholder of  $0x$  for the missing term.

$$\begin{array}{r}
 x^2 + 3x + 3 \quad R \ 15 \\
 x-1 \overline{) x^3 + 2x^2 + 0x + 12} \\
 \underline{-(x^3 - x^2)} \phantom{+ 0x + 12} \\
 3x^2 + 0x \phantom{+ 12} \\
 \underline{-(3x^2 - 3x)} \phantom{+ 12} \\
 3x + 12 \\
 \underline{-(3x - 3)} \\
 15
 \end{array}$$



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

$$\frac{6x^4 - 17x^3 + 13x^2 - 24x + 10}{2x - 5}$$

**Answer choices:**

- A  $3x^3 - x^2 + 4x - 2$
- B  $3x^3 - 2x^2 + 4x - 10$
- C  $3x^3 - x^2 + 9x - 1$
- D  $3x^3 - x^2 + 4x - 5$



**Solution: A**

We'll use polynomial long division.

$$\begin{array}{r}
 3x^3 \quad -x^2 \quad +4x \quad -2 \\
 2x-5 \overline{) 6x^4 - 17x^3 + 13x^2 - 24x + 10} \\
 \underline{-(6x^4 - 15x^3)} \phantom{+ 13x^2 - 24x + 10} \\
 -2x^3 + 13x^2 \phantom{- 24x + 10} \\
 \underline{-(-2x^3 + 5x^2)} \phantom{- 24x + 10} \\
 8x^2 - 24x \phantom{+ 10} \\
 \underline{-(8x^2 - 20x)} \phantom{+ 10} \\
 -4x + 10 \\
 \underline{-(-4x + 10)} \\
 0
 \end{array}$$

