

Polynomial Division, Remainders & Factors

Foundation to Challenge

Practice should make the test feel easier, not merely familiar.

Work without the answer key first. Check answers through the SAT Practice Library after completing the set.

FOUNDATION

- 1 What is the remainder when $x^2 + 3x + 5$ is divided by $x + 2$?

STANDARD

- 2 What is the remainder when $x^4 + 2x^3 - 3x^2 + 5$ is divided by $x + 2$?

FOUNDATION

- 3 Find the remainder when $f(x) = 2x^3 - 7x^2 + 4x - 1$ is divided by $x - 3$.

ADVANCED

- 4 The expression $5x^2 + 7$ can be written as $A(2x - 3) + R$, where R is constant. What is R ?

FOUNDATION

- 5 A polynomial g has $g(-4) = 6$. What is the remainder when $g(x)$ is divided by $x + 4$?

- A. -6
- B. -4
- C. 4
- D. 6

STANDARD

- 6 For $P(z) = 3z^3 - kz^2 + 2z + 4$, if $z - 1$ is a factor, what is k ?

FOUNDATION

- 7 Which is a factor of $x^3 + 2x^2 - x - 2$?

- A. $x - 3$
- B. $x + 3$
- C. $x + 2$
- D. $x - 4$

ADVANCED

- 8 If $\frac{8x^2 + 6x + 3}{2x + 1} = Q + \frac{2}{2x + 1}$, what is Q ?

- A. $4x + 3$
- B. $4x + 1$
- C. $8x^2 + 5x + 1$
- D. $4x - 3$

9

When $4x^2 - 11x - 7$ is divided by $4x - 3$, the result is $A - \frac{13}{4x-3}$. What is A ?

- A. $x - 2$
- B. $x + 2$
- C. $x - 1$
- D. $x + 1$

STANDARD

10

The expression $3x^2 - 5x - 8$ can be written as $A(x+1) + B$, where B is constant. What is A ?

- A. $3x + 8$
- B. $3x + 2$
- C. $3x - 8$
- D. $3x - 2$

ADVANCED

11

$x^2 + 5x - 4 = (ax + b)(x - 3) + c$. What is $a + b + c$?

FOUNDATION

12

For polynomial p , $p(4) = 0$. Which must be a factor?

- A. $4x$
- B. $4x - 4$
- C. $x - 4$
- D. $x + 4$

STANDARD

- 13 For $p(x) = x^3 - 2x^2 - 5x + 6$, which listed factors divide p ? I. $x - 1$ II. $x - 3$ III. $x + 2$
- A. I only
B. I and II only
C. II and III only
D. I, II and III

CHALLENGE

- 14 If $x - 2$ and $x + 2$ are factors of $bx^3 + ax^2 - 12x - 12$, what is a ?

FOUNDATION

- 15 If $p\left(\frac{2}{5}\right) = 0$, which must be a factor of $p(x)$?
- A. $5x - 2$
B. $5x + 2$
C. $x - 5$
D. $x + 5$

FINISHED?

Check your answers online

aryalanupme.github.io/sat-polynomial-division.html

Do not stop at “wrong.” Identify why it was wrong: concept, algebra, arithmetic, interpretation, calculator choice, or timing.

I do not correct the answer first. I correct the reason.

Independent SAT-style practice. Not affiliated with or endorsed by College Board.