

Multiple-Choice Questions


1. What is the remainder when $-3x^3 + x^2 - 2x + 3 + 2x^4$ is divided by $x + 1$?
A. -11 **B. 11** C. 8 D. -8
2. When $2x^4 - x^3 - 3x^2 + x - p$ is divided by $x - 2$, the remainder is 0. What is the value of p ?
A. -14 B. 7 C. -7 **D. 14**

TEACHER NOTE

Solution strategy: Since students have not yet learned the remainder theorem, they will have to divide then at the last step identify the value of p for which the remainder is 0.

Study Note

What do you need to check before you divide a polynomial by a binomial?

-  If the polynomial is a trinomial, I check to see if it can be factored. If the trinomial can be factored, I check to see if I can remove a common factor. I check that the polynomial and binomial are written in descending order. And, if the polynomial is missing one or more terms, I insert a term $0x^n$ for each missing term, where n is the exponent of the missing term.

ANSWERS

Check Your Understanding

1. $2x^2 + 5x + 3$ R8
2. $3x^4 - x^3 + 3x - 20 = (x + 2)(3x^3 - 7x^2 + 14x - 25) + 30$
3. $-3x^4 + 2x^3 + 3x^2 - 4x + 5 = (x + 2)(-3x^3 + 8x^2 - 13x + 22) - 39$

Exercises

3. a) $2x + 3$ b) $x - 7$ c) $2x - 3$ d) $x - 5$ 4. a) $2x^2 + x + 6$ R11
b) $5x - 27$ R105 c) $3x^3 + 15x^2 + 22x + 45$ R81
d) $-5x^4 + 5x^3 - 8x^2 + 19x - 38$ R38 5. a) $x + 4$ R10 b) $2x^2 - x + 1$ R1
6. $x^3 + 2x^2 - 17x + 3$ 7. a) $4x^3 - 8x^2 - 27x + 45 = (x - 3)(4x^2 + 4x - 15)$
b) $2x^4 + 13x^3 - 7x = (x + 2)(2x^3 + 9x^2 - 18x + 29) - 58$
8. a) $5x^4 + 12x^3 - 21x^2 - 40x - 12 = (x + 3)(5x^3 - 3x^2 - 12x - 4)$
b) $-x^5 + 6x^4 - 11x^3 + 5 = (x + 1)(-x^4 + 7x^3 - 18x^2 + 18x - 18) + 23$
9. a) $2x^4 + 3x^3 + 8x^2 + 13x + 28$ R66
b) $2x^4 - 9x^3 + 38x^2 - 155x + 622$ R(-2478)
11. a) i) $4x^2 + x - 7$ R12 ii) $4x^2 + 9x + 3$ R8 b) i) $-4x^2 - 9x - 3$ R8
ii) $-4x^2 - x + 7$ R12
12. $3x^4 - 4x^3 + 5x^2 - 6x + 10 = (x - 1)(3x^3 - x^2 + 4x - 2) + 8$
14. $6x^2 - 4x - 21$ R($29x^2 - 35x - 32$)

Multiple Choice

1. B 2. D