

The Remainder and Factor Theorem

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use the remainder theorem and synthetic division to find $f(k)$.

- 1) $k = 2$; $f(x) = x^2 - 2x + 5$ 1) _____
A) -5 B) -3 C) -13 D) 5
- 2) $k = -3$; $f(x) = x^2 + 2x + 2$ 2) _____
A) 1 B) -13 C) 5 D) -17
- 3) $k = -2$; $f(x) = 3x^3 - 7x^2 - 3x + 3$ 3) _____
A) 14 B) -55 C) -43 D) -5
- 4) $k = 4$; $f(x) = x^3 - 2x^2 + 5x - 2$ 4) _____
A) 54 B) 50 C) -78 D) -76
- 5) $k = 2$; $f(x) = 9x^4 + 10x^3 + 6x^2 - 6x + 16$ 5) _____
A) 360 B) 500 C) 252 D) 36
- 6) $k = 5$; $f(x) = x^3 - 3x^2 - 4x - 5$ 6) _____
A) 35 B) 25 C) -225 D) -220

Solve the problem.

- 7) Use synthetic division to divide $f(x) = x^3 + 12x^2 + 41x + 30$ by $x + 5$. Use the result to find all zeros of f . 7) _____
A) $\{-5, 6, 1\}$ B) $\{5, -6, -1\}$ C) $\{-5, -6, -1\}$ D) $\{5, 6, 1\}$
- 8) Use synthetic division to divide $f(x) = x^3 + 1x^2 - 26x + 24$ by $x + 6$. Use the result to find all zeros of f . 8) _____
A) $\{-6, -4, -1\}$ B) $\{6, 4, 1\}$ C) $\{-6, 4, 1\}$ D) $\{6, -4, -1\}$
- 9) Use synthetic division to divide $f(x) = x^3 - 1x^2 - 26x - 24$ by $x + 1$. Use the result to find all zeros of f . 9) _____
A) $\{1, -6, 4\}$ B) $\{1, 6, -4\}$ C) $\{-1, -6, 4\}$ D) $\{-1, 6, -4\}$

Use synthetic division to show that the number given to the right of the equation is a solution of the equation, then solve the polynomial equation.

- 10) $x^3 - 5x^2 + 2x + 8 = 0$; 2 10) _____
A) $\{4, 1, 2\}$ B) $\{-4, 1, 2\}$ C) $\{4, -1, 2\}$ D) $\{-4, -1, 2\}$
- 11) $2x^3 + 10x^2 - 4x - 48 = 0$; -3 11) _____
A) $\{2, -4, -3\}$ B) $\{-2, 4, -3\}$ C) $\{-2, -4, -3\}$ D) $\{2, 4, -3\}$

Answer Key

Testname: THE REMAINDER AND FACTOR THEOREM

- 1) D
- 2) C
- 3) C
- 4) B
- 5) C
- 6) B
- 7) C
- 8) C
- 9) D
- 10) C
- 11) A