

Name _____
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Date _____
Algebra II

Determining Whether a Binomial is a Factor

Determine whether the following are factors

1. Is $x - 6$ a factor of $p(x) = x^3 - 6x^2 + 4x - 1$? Explain your answer.
2. Is $x + 2$ a factor of $p(x) = x^3 - 3x^2 - 8x + 4$? Explain your answer.
3. Is $x + 1$ a factor of $p(x) = 2x^2 + 5x + 2$? Explain your answer.
4. Determine if $x - 5$ is a factor of $2x^3 - 4x^2 - 7x - 10$. Explain your answer.
5. Determine if $x + 4$ is a factor of $p(x) = x^4 - 6x^3 - 4x^2 + 54x - 45$. Explain your answer.
6. Determine if $x + 3$ is a factor of $p(x) = x^4 + 7x^3 + 9x^2 - 21x - 36$. Explain your answer.
7. Use an appropriate procedure to show that $x - 4$ is a factor of the function $f(x) = 2x^3 - 5x^2 - 11x - 4$. Explain your answer.

8. Which binomial is a factor of $x^4 - 4x^2 - 4x + 8$?

- 1) $x - 2$
- 2) $x + 2$
- 3) $x - 4$
- 4) $x + 4$

9. Which binomial is *not* a factor of the expression $x^3 - 11x^2 + 16x + 84$?

- 1) $x + 2$
- 2) $x + 4$
- 3) $x - 6$
- 4) $x - 7$

10. Which binomial is *not* a factor of the expression $x^3 - 6x^2 - 49x - 66$?

- 1) $x - 11$
- 2) $x + 2$
- 3) $x + 6$
- 4) $x + 3$

11. Which binomial is a factor of the expression $x^3 - 7x - 6$?

- 1) $x + 3$
- 2) $x - 1$
- 3) $x - 2$
- 4) $x + 2$

12. Which binomial is *not* a factor of the expression $x^3 - 4x^2 - 25x + 28$?

- 1) $x + 6$
- 2) $x - 7$
- 3) $x - 1$
- 4) $x + 4$

13. Which binomial is a factor of the expression $x^4 + 4x^2 - 32$?

- 1) $x + 8$
- 2) $x - 8$
- 3) $x - 1$
- 4) $x + 2$

14. Which binomial is not a factor of $p(x) = 2x^3 + 7x^2 - 5x - 4$?

- 1) $x + 4$
- 2) $x + 1$
- 3) $x - 1$
- 4) $2x + 1$

15. Given $r(x) = x^3 - 4x^2 + 4x - 6$, find the value of $r(2)$. What does your answer tell you about $x - 2$ as a factor of $r(x)$? Explain.

16. When $g(x)$ is divided by $x + 4$, the remainder is 0. Given $g(x) = x^4 + 3x^3 - 6x^2 - 6x + 8$, which conclusion about $g(x)$ is true?

- 1) $g(4) = 0$
- 2) $g(-4) = 0$
- 3) $x - 4$ is a factor of $g(x)$.
- 4) No conclusion can be made regarding $g(x)$.