

Algebra: Factor & Remainder Theorem

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DIRECTIONS

Use the Remainder Theorem to evaluate $P(c)$. Use the Factor Theorem to test factors.

1 Use Remainder Theorem. Find $P(3)$:

$$P(x) = 3x^2 + 3x + 4$$

Answer: _____

2 Use Remainder Theorem. Find $P(3)$:

$$P(x) = 3x^2 + 1x - 5$$

Answer: _____

3 Use Remainder Theorem. Find $P(3)$:

$$P(x) = 3x^2 + 2x + 0$$

Answer: _____

4 Use Remainder Theorem. Find $P(2)$:

$$P(x) = 2x^2 - 2x - 1$$

Answer: _____

5 Use Remainder Theorem. Find $P(-2)$:

$$P(x) = 2x^2 - 3x + 0$$

Answer: _____

6 Is $(x-3)$ a factor?

$$P(x) = x^2 + 2x + 1$$

Answer: _____

7 Is $(x-3)$ a factor?

$$P(x) = x^2 - 4x + 3$$

Answer: _____

8 Is $(x-3)$ a factor?

$$P(x) = x^2 + 4x + 3$$

Answer: _____

9 Is $(x-1)$ a factor?

$$P(x) = x^2 - 4x + 4$$

Answer: _____

10 Is $(x-2)$ a factor?

$$P(x) = x^2 - 4$$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES $P(c)$ equals the remainder when $P(x)$ is divided by $(x-c)$. If $P(c)=0$, then $(x-c)$ is a factor.

1 Use Remainder Theorem. Find $P(3)$:

$$= P(3) = 40$$

$$P(x) = 3x^2 + 3x + 4$$

2 Use Remainder Theorem. Find $P(3)$:

$$= P(3) = 25$$

$$P(x) = 3x^2 + 1x - 5$$

3 Use Remainder Theorem. Find $P(3)$:

$$= P(3) = 33$$

$$P(x) = 3x^2 + 2x + 0$$

4 Use Remainder Theorem. Find $P(2)$:

$$= P(2) = 3$$

$$P(x) = 2x^2 - 2x - 1$$

5 Use Remainder Theorem. Find $P(-2)$:

$$= P(-2) = 14$$

$$P(x) = 2x^2 - 3x + 0$$

6 Is $(x-3)$ a factor?

$$= P(3) = 16, \text{ Factor: No}$$

$$P(x) = x^2 + 2x + 1$$

7 Is $(x-3)$ a factor?

$$= P(3) = 0, \text{ Factor: Yes}$$

$$P(x) = x^2 - 4x + 3$$

8 Is $(x-3)$ a factor?

$$= P(3) = 24, \text{ Factor: No}$$

$$P(x) = x^2 + 4x + 3$$

9 Is $(x-1)$ a factor?

$$= P(-1) = 9, \text{ Factor: No}$$

$$P(x) = x^2 - 4x + 4$$

10 Is $(x-2)$ a factor?

$$= P(2) = 0, \text{ Factor: Yes}$$

$$P(x) = x^2 - 4$$