

11U1 - Rational Expressions: Practice Test

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Simplify $(11v^2 - 6vw - 3w^2) - (-7v^2 + vw + 13w^2)$.
- | | |
|--------------------------|--------------------------|
| a. $18v^2 - 7vw - 16w^2$ | c. $2(vw)^2 - 7vw$ |
| b. $4v^2 - 5vw + 10w^2$ | d. $18v^2 - 5vw + 10w^2$ |
- _____ 2. Which of the following represents the first step for factoring $g^3 + 5g^2 + 2g + 10$ by grouping?
- | | |
|----------------------------|--------------------------------------|
| a. $g^2(g + 5) + 2(g + 5)$ | c. $(g + 5)^3$ |
| b. $(g^2 + 5) + (2g + 5)$ | d. $(g + 5)(g + 5) + (g + 2)(g + 2)$ |
- _____ 3. Which of the following are factors for the polynomial $9x^2 - 16$?
- | | |
|-----------------------|-----------------------|
| a. $(9x - 16)(x + 1)$ | c. $(9x + 4)(x - 4)$ |
| b. $(3x - 4)(3x - 4)$ | d. $(3x + 4)(3x - 4)$ |
- _____ 4. Which of the following are factors for the polynomial $2q^2 + 24q + 72$?
- | | |
|----------------------|----------------------|
| a. $2(q + 6)(q + 6)$ | c. $(2q + 9)(q + 8)$ |
| b. $2(q + 9)(q + 8)$ | d. $2(q + 9)(q + 4)$ |
- _____ 5. What are the restrictions on the variable for $\frac{d^2 + 10d + 25}{5d^2 - 25d}$?
- | | |
|----------------------|--------------------|
| a. $d \neq -5, 0, 5$ | c. $d \neq 0, 5$ |
| b. $d \neq 0$ | d. No restrictions |

Full Solution - Write clear and thorough solutions to the following problems. You can receive up to 4 Communication Points for how well your mathematics is presented.

6. Expand and simplify.
 $(x + 5)(x - 3) + (x - 6)(x + 1)$
7. Factor $n^3 + 4n^2 + 3n + 12$ by grouping.

8. In the picture I have made a terrible error. Explain to me the mistake I have made.

$$\frac{(x-2)(x+3)}{(x+3)(2x-5)}$$
$$= \frac{x-2}{2x-5}$$

9. Simplify and state any restrictions on the variable.

$$\frac{12w^4}{21w^6}$$

10. Simplify and state any restrictions on the variable.

$$\frac{q^2 - 14q + 49}{q^2 - 49}$$

11. Simplify $\frac{2x^2 + 7x + 3}{x - 4} \times \frac{x^2 - 16}{x^2 + 8x + 15}$ and state any restrictions on the variables.

12. Simplify $\frac{4-x}{3x^2-4x-4} \div \frac{5x-20}{6x^2-17x+10}$ and state any restrictions on the variables.

13. Simplify and state any restrictions on the variable.

$$\frac{5k}{k^2-k-6} + \frac{4}{k^2+4k+4}$$

14. Simplify and state any restrictions on the variable.

$$\frac{m}{3m^2 - 9m + 6} - \frac{2m + 1}{3m^2 + 3m - 6}$$

15. Simplify and state any restrictions on the variable. Remember the order of operations.

(Note: this one is too complicated for the actual test, but there will be a simpler order of operations question on the test.)

$$\frac{7x}{5x^2 - 125} + \frac{4}{3x + 15} \div \frac{2x}{x^2 + 8x + 15}$$