

Summer Review IV Rational Expressions

I. Express the fraction in lowest terms.

1. $\frac{13 \cdot 27 \cdot 22 \cdot 10}{6 \cdot 4 \cdot 11 \cdot 12}$

2. $\frac{x^2 - x - 2}{x^2 + 2x + 1}$

3. $\frac{z+1}{z^3+1}$

4. $\frac{(x+c)(x^2-cx+c^2)}{x^4+c^3x}$

5. $\frac{x^4-y^4}{(x^2+y^2)(x^2-xy)}$

II. Perform the indicated operations.

6. $\frac{a}{b} + \frac{2a}{b^2} + \frac{3a}{b^3}$

7. $\frac{1}{x+4} + \frac{2}{(x+4)^2} - \frac{3}{x^2+8x+16}$

8. $\frac{1}{x+y} + \frac{x+y}{x^3+y^3}$

9. $\frac{x+y}{(x^2-xy)(x-y)^2} - \frac{2}{(x^2-y^2)^2}$

III. Express in Lowest terms.

$$10. \frac{6x-12}{6x} \cdot \frac{8x^2}{x-2}$$

$$11. \frac{t^2-t-6}{t^2-6t+9} \cdot \frac{t^2+4t-5}{t^2-25}$$

$$12. \frac{2u^2+uv-v^2}{4u^2-4uv+v^2} \cdot \frac{8u^2+6uv-9v^2}{4u^2-9v^2}$$

IV. Compute the quotient and express in lowest terms.

$$13. \frac{\frac{x+3}{x+4}}{\frac{2x}{x+4}}$$

$$14. \frac{\frac{u^3+v^3}{u^2-v^2}}{\frac{u^2-uv+v^2}{u+v}}$$

$$15. \frac{\frac{1}{(x+h)^2} \cdot \frac{1}{x^2}}{h}$$

$$16. \frac{(x+y)^{-1}}{x^{-1}+y^{-1}}$$

V. Find a numerical value to show that the statement is false. Then find the mistake in the statement and correct it.

$$17. \frac{r+s}{r+t} = 1 + \frac{s}{t}$$

$$18. \frac{u}{v} + \frac{v}{u} = 1$$