Rational Expressions Practice Test **Name _____**

(Multiple Choice)

1. Find any values for which $\frac{x+5}{x^3-7x^2+12x}$ is undefined.

(a) 0, 3, 4 (b) 0, -3, -4 (c) 0, 3, 4, -5 (d) 0, -5

2. Find the numerical value of $\frac{x-2}{2x^2-7x-15}$ when x = -2.

(a) 0 (b) $\frac{4}{9}$ (c) $-\frac{4}{7}$ (d) Undefined

3. Find the rational expression equivalent to $-\frac{4-3x}{5x+6}$.

(a) $\frac{-4-3x}{5x+6}$ (b) $\frac{-4+3x}{-5x-6}$ (c) $\frac{3x-4}{-5x-6}$ (d) $\frac{3x-4}{5x+6}$

For exercises 4 and 5, write the rational expression in lowest terms.

4. $\frac{36c^5d^4}{96cd^8}$

(a) $\frac{c^4}{3d^4}$ (b) $\frac{3c^4d^4}{8}$ (c) $\frac{c^4d^4}{3}$ (d) $\frac{3c^4}{8d^4}$

5. $\frac{1-w}{w^2-1}$

(a) –(w + 1) (b) w + 1 (c) $-\frac{1}{w+1}$ (d) $\frac{1}{w+1}$

For exercises 6-8, multiply or divide. Write the answer in lowest terms.

6. $\frac{9(t+d)}{5} \div \frac{10(t+d)}{6}$

(a) $3(t+d)$ (b) $\frac{25}{27}$ (c) $\frac{27}{25}$ (d) $\frac{27}{25(t+d)}$

7. $\dfrac{c^2+7c+10}{c^2+2c-15}\cdot\dfrac{4c+12}{3c+15}$

(a) $\dfrac{4(c+2)(c+3)}{3(c-3)(c+5)}$ (b) $\dfrac{4(c+2)(c+5)}{3}$ (c) $\dfrac{4(c+2)(c+3)}{3(c-3)}$ (d) $\dfrac{4(c+2)}{3}$

8. $\dfrac{a^2-b^2}{2a-2b}\div\dfrac{8}{a+b}$

(a) $\dfrac{1}{16}$ (b) $\dfrac{(a+b)^2}{16}$ (c) $\dfrac{(a-b)(a+b)}{16}$ (d) $\dfrac{a+b}{8}$

For exercises 9-10, find the least common denominator for each list of rational expressions.

9. $\dfrac{5}{6ab^3}, \dfrac{-7}{2a^2}, \dfrac{9}{4b^2}$

(a) $2a$ (b) $12a^2b^3$ (c) $48a^3b^5$ (d) $24a^3b^3$

10. $\dfrac{x-3}{2x^2-9x+4}, \dfrac{2x+7}{2x^2+9x-5}$

(a) $(2x-1)^2(x-4)(x+5)$ (b) $(x-4)(x+5)$ (c) $(2x-1)(x-4)(x+5)$ (d) $2x-1$

For exercises 11-12, rewrite each rational expression with the given denominator.

11. $\dfrac{9}{7z^3}=\dfrac{\quad}{63z^{12}}$

(a) $\dfrac{18z^9}{63z^{12}}$ (b) $\dfrac{81z^9}{63z^{12}}$ (c) $\dfrac{18z^4}{63z^{12}}$ (d) $\dfrac{81z^4}{63z^{12}}$

12. $\dfrac{8}{4p+16}=\dfrac{\quad}{4p^2-64}$

(a) $\dfrac{p+4}{4p^2-64}$ (b) $\dfrac{8p+32}{4p^2-64}$ (c) $\dfrac{p-4}{4p^2-64}$ (d) $\dfrac{8p-32}{4p^2-64}$

For exercises 13-16, add or subtract. Write each answer in lowest terms.

13. $\dfrac{3r+1}{r-4}-\dfrac{r+9}{r-4}$

(a) $\dfrac{2r+10}{r-4}$ (b) $\dfrac{4r-8}{r-4}$ (c) $\dfrac{4r+10}{r-4}$ (d) 2

14. $\dfrac{t+2}{3t-9}+\dfrac{3-2t}{5t-15}$

(a) $\dfrac{19-t}{15(t-3)}$ (b) $\dfrac{15-t}{15(t-3)}$ (c) $\dfrac{3t+8}{15(t-3)}$ (d) $\dfrac{5-t}{8(t-3)}$

15. $\dfrac{3x+2}{4x-5}-\dfrac{x-1}{5-4x}$

(a) $\dfrac{x+1}{x-5}$ (b) $\dfrac{2x+3}{4x-5}$ (c) $\dfrac{4x+1}{4x-5}$ (d) $\dfrac{2x+1}{4x-5}$

16. $\dfrac{r-1}{r^2-r-2}+\dfrac{r-2}{r^2-4}$

(a) $\dfrac{2r^2-4}{(r-2)(r+2)(r+1)}$ (b) $r-1$ (c) $\dfrac{2}{r+1}$ (d) $\dfrac{2}{(r+2)(r+1)}$

For exercises 17-18, simplify the complex fraction.

17. $\dfrac{\dfrac{3-t}{6}}{\dfrac{9-t^2}{15}}$

(a) $\dfrac{5}{2}(3+t)$ (b) $\dfrac{5}{2(3+t)}$ (c) $\dfrac{5}{2(3-t)}$ (d) $\dfrac{5}{2(3-t)}$

18. $\dfrac{\frac{x}{3}-y}{y-\frac{x}{3}}$

(a) $\left(\frac{x}{3}-y\right)^2$ (b) $\dfrac{x-y}{x+y}$ (c) -1 (d) $\dfrac{x-3y}{x+3y}$

For exercises 19-20, solve the equation.

19. $\dfrac{2}{x+2}-\dfrac{7}{x-3}=\dfrac{5}{x^2-x-6}$

(a) -5 (b) 5 (c) $\frac{3}{5}$ (d) $-\frac{3}{5}$

20. Solve the formula $H=\dfrac{b}{D+d}$ for D.

(a) $D=\dfrac{b-d}{H}$ (b) $D=\dfrac{b}{H}-d$ (c) D = b – Hd – H (d) D = Hb – d

For exercises 21-22, solve each problem.

21. Maria can paddle her canoe 2 miles upstream against the current in the same time it would take her to paddle 6 miles downstream. Maria can paddle 2 mph in still water. What is the speed of the current?

(a) -1 mph (b) 1 mph (c) 3 mph (d) 4 mph

22. It takes Brad 2 hours to mow his lawn. It takes Kris 3 hours to mow the same lawn. At the same pace, how long would it take them to mow the lawn if they do the job together?

(a) $2\frac{1}{2}$ hours (b) $1\frac{1}{5}$ hours (c) $1\frac{1}{6}$ hours (d) $\frac{5}{6}$ hours

Do your best! Rise to the challenge! Live and learn!