Algebra 2
Rational Functions Review

Name: KEY

Date: _____ Period: _____

Perform the indicated operation. State the excluded values (restrictions).

1.) $\frac{m-3n}{6m^3n} - \frac{m+3n}{6m^3n}$

$= \frac{-6n}{6m^3n}$

$= \boxed{\frac{-1}{m^3}}$

2.) $\frac{6}{x-1} - \frac{5x}{4}$ (multiply by $\frac{4(x-1)}{4(x-1)}$)

$= \frac{24}{4(x-1)} - \frac{(5x^2-5x)}{4(x-1)}$

$= \boxed{\frac{-5x^2+5x+24}{4(x-1)}}$

3.) (multiply by $\frac{(x-8)}{(x-8)}$ and $\frac{(x+7)}{(x+7)}$) $\frac{3}{x+7} + \frac{4}{x-8}$

$= \frac{3x-24}{(x+7)(x-8)} + \frac{4x+28}{(x+7)(x-8)}$

$= \boxed{\frac{7x+4}{(x+7)(x-8)}}$

4.) $\frac{3}{4v^2+4v} - \frac{7}{2}$

$= \frac{3}{4v(v+1)} - \frac{7}{2} \cdot \frac{2v(v+1)}{2v(v+1)}$

$= \frac{3}{4v(v+1)} - \frac{(14v^2+14v)}{4v(v+1)}$

$= \boxed{\frac{-14v^2-14v+3}{4v(v+1)}}$

5.) $\frac{5}{n+5} + \frac{4n}{2n+6}$

$= \frac{2(n+3)}{2(n+3)} \cdot \frac{5}{n+5} + \frac{4n}{2(n+3)} \cdot \frac{(n+5)}{(n+5)}$

$= \frac{10n+30}{2(n+3)(n+5)} + \frac{4n^2+20n}{2(n+3)(n+5)}$

$= \frac{4n^2+30n+30}{2(n+3)(n+5)}$

$= \frac{2(2n^2+15n+15)}{2(n+3)(n+5)}$

$= \boxed{\frac{2n^2+15n+15}{(n+3)(n+5)}}$

6.) $\frac{x^2-2x+3}{x^2+7x+12} - \frac{(x^2-4x-5)}{x^2+7x+12}$

$= \frac{2x+8}{x^2+7x+12}$

$= \frac{2(x+4)}{(x+4)(x+3)}$

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

7.) $\frac{k^2-6k-27}{k+1} \cdot \frac{k+1}{4}$

$= \frac{(k-9)(k+3)}{(k+1)} \cdot \frac{(k+1)}{4}$

$= \frac{(k-9)(k+3)}{4}$

8.) $\frac{a-4}{a^2-16} \cdot \frac{a^2+5a+4}{a-5}$

$= \frac{(A-4)}{(A-4)(A+4)} \cdot \frac{(A+4)(A+1)}{(A-5)}$

$= \frac{(A+1)}{(A-5)}$

9.) $\frac{x^2-8x+12}{x^2-16} \bullet \frac{4x+16}{x^2-4x+4}$

$= \frac{(x-6)(x-2)}{(x+4)(x-4)} \cdot \frac{4(x+4)}{(x-2)(x-2)}$

$= \frac{4(x-6)}{(x-4)(x-2)}$

10.) $\frac{3m^2-3m-36}{2m^2+8m-10} \div \frac{m^2-m-12}{m^2+3m-10}$

$= \frac{3(M-4)(M+3)}{2(M+5)(M-1)} \cdot \frac{(M+5)(M-2)}{(M-4)(M+3)}$

$= \frac{3(M-2)}{2}$

11) $\frac{\frac{4x^2-1}{3x^3-6x^2-24x}}{\frac{12x^2+12x-9}{-2x^2+5x+12}}$

$= \frac{4x^2-1}{3x^3-6x^2-24x} \div \frac{12x^2+12x-9}{-2x^2+5x+12}$

$= \frac{(2x-1)(2x+1)}{3x(x-4)(x+2)} \cdot \frac{-1(x-4)(2x+3)}{3(2x+3)(2x-1)}$

$= \frac{-1(2x+1)}{9x(x+2)}$

12) $\frac{12xy^9z^4}{36x^3yz^2}$

$= \frac{y^8z^2}{3x^2}$