Rational Expressions Review

Review

1. Factor

a) $m^2 + 8m + 15$

b) $2x^2 - 17x + 21$

c) $4y + mx - 4x - my$

d) $2x^2 - 2x - 24$

e) $8n^2 - 38n - 60$

f) $25x^2 - 36y^2$

g) $(x + y)^2 - 36$

h) $9x^2 - 30x + 25$

i) $25m^2 - (x - y)^2$

j) $x^2 - 8xy + 16y^2 - 36m^2$

k) $4x^2 - 20xy + 25y^2$

l) $x^2 + 4xy + 4y^2 - m^2 - 6mn - 9n^2$

2. Simplify and <u>state any restrictions</u>.

a) $\dfrac{x^2 + 11x + 28}{x^2 + 4x - 21} \times \dfrac{x^2 - 2x - 3}{x^2 + 6x + 5}$

b) $\dfrac{49x^2 - 1}{21x^2 + 11x - 2} \div \dfrac{14x^2 + 9x + 1}{6x^2 + 7x + 2}$

c) $\dfrac{15x^2}{x^2 + 3x + 2} \times \dfrac{x^2 - 4x - 5}{5x^2 - 25x} \div \dfrac{x^2 - 16}{x^2 + 8x + 16}$

3. Simplify. Don't worry about restrictions.

a) $\dfrac{5}{2x + 3} - \dfrac{6}{2x - 3}$

b) $\dfrac{6}{x^2 - 4} + \dfrac{4}{x^2 + 4x + 4}$

c) $\dfrac{5m - 10}{m^2 - 4} - \dfrac{2m - 6}{m^2 - 7m + 12}$

d) $\dfrac{3}{2m - 5} - \dfrac{4}{4m^2 - 20m + 25}$

ANSWERS

1. a) $(m+5)(m+3)$ b) $(2x-3)(x-7)$ c) $(x-y)(m-4)$
d) $2(x-4)(x+3)$ e) $2(4n+5)(n-6)$ f) $(5x+6y)(5x-6y)$
g) $(x+y+6)(x+y-6)$ h) $(3x-5)^2$ i) $(5m+x-y)(5m-x+y)$
j) $(x-4y-6m)(x-4y+6m)$ k) $(2x-5y)^2$
l) $(x+2y+m+3n)(x+2y-m-3n)$

2. a) $\dfrac{x+4}{x+5}$ where $x \neq -7, 3, -5, -1$

b) 1 where $x \neq \dfrac{1}{7}, \dfrac{-2}{3}, \dfrac{-1}{7}, \dfrac{-1}{2}$

c) $\dfrac{3x(x+4)}{(x+2)(x-4)}$ where $x \neq -2, -1, 0, 5, -4, 4$

3. a) $\dfrac{-(2x+33)}{(2x+3)(2x-3)}$ b) $\dfrac{2(5x+2)}{(x+2)(x+2)(x-2)}$

c) $\dfrac{3(m-8)}{(m+2)(m-4)}$ d) $\dfrac{6m-19}{(2m-5)(2m-5)}$