ERL MCR Unit 1

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UNIT 1 MCR 3UI Exam Review

Simplify and state restrictions on the variable(s)

a) $f(x) = \frac{2xy-12y^2}{18y^2-3xy}$

$= \frac{2y(x-6y)}{-3y(-6y+x)}$

$= -\frac{2}{3}$ $\quad x \neq 6y, y \neq 0$

OR $-\frac{2}{3}$

Decomp. M-6 A-5 Aussie Cross Products

$= 2a^2 - 6ab + 1ab - 3b^2$ $-6, 1$ $(2a-6b)(2a+b)$

$= 2a(a-3b) + b(a-3b)$ $= (a-3b)^2(2a+b)$

$= (2a+b)(a-3b)$

b) $g(x) = \dfrac{a^2-4ab-21b^2}{2a^2+ab} \div \dfrac{a^2-9b^2}{2a^2-5ab-3b^2}$

$= \dfrac{a^2-4ab-21b^2}{2a^2+ab} \times \dfrac{2a^2-5ab-3b^2}{a^2-9b^2}$

$= \dfrac{(a-7b)(a+3b)}{a(2a+b)} \times \dfrac{(a-3b)(2a+b)}{(a+3b)(a-3b)}$

$= \dfrac{a-7b}{a}$, $a \neq 0, b \neq -2a, a \neq \pm 3b$

$\overline{10}$ $\overline{6}$ $\overline{30}$

$2\cdot5$ $2\cdot3$ $2\cdot5\cdot3$

c) $h(x) = \dfrac{y-3}{y^2+5y+6} - \dfrac{5}{y^2-y-12}$

$= \dfrac{y-3}{(y+3)(y+2)} - \dfrac{5}{(y-4)(y+3)}$

$= \dfrac{(y-3)(y-4) - 5(y+2)}{(y+3)(y+2)(y-4)}$

$= \dfrac{y^2-7y+12-5y-10}{(y+3)(y+2)(y-4)}$

$= \dfrac{y^2-12y+2}{(y+3)(y+2)(y-4)}$ $\quad y \neq -3, -2, 4$

d) $k(x) = \frac{1}{3x^2} - \frac{15}{4x} \times \frac{3x}{5x}$

BEDMAS

$= \frac{1}{3x^2}\frac{(4)}{(4)} - \frac{9}{4x}\frac{(3x)}{(3x)}$

$= \frac{1(4)-9(3x)}{12x^2}$

$= \frac{4-27x}{12x^2}, \quad x \neq 0$