GRADE 11 (MCR3U1)

SECONDARY SCHOOL MATHEMATICS TESTS AND EXAMS

(WITH COMPLETE SOLUTIONS)

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TEST #4

1. Simplify and state restrictions on the variables.

a) $\frac{4}{8x-4}$

b) $\frac{2}{x}+\frac{5}{xy}+\frac{3}{y}$

c) $5+\frac{2}{x-y}$

d) $\frac{5}{x^2-16}+\frac{2}{x^2-4x}$

e) $\frac{x}{x+3}-\frac{x-3}{x}$

f) $\frac{2}{3x+6}-\frac{4x}{x^2+2x}$

g) $\frac{x+1}{3x^2+6x+3}-\frac{1}{x^2+9x+8}$

h) $\frac{5}{x^2+x-6}-\frac{3}{x^2-4x+4}$

2. Simplify and state restrictions on the variables.

a) $\frac{x^2-5x-14}{x^2+6x+9}\cdot\frac{x^2-9}{3x-21}$

b) $\frac{x^2+10x+25}{x^2-9}\div\frac{5x+25}{2x-6}$

c) $\frac{3x-4}{2x^2+3x-9}\cdot\frac{4x^2-12x+9}{6x-8}$

d) $\frac{x^2-1}{x^2+2x-3}\cdot\frac{x-2}{x}+\frac{x+2}{x+3}$

e) $\frac{x^2+3x-10}{x^2-4x+4}\div\frac{x^2+2x-15}{3x-6}+\frac{2}{x+3}$

f) $\frac{3x}{x^2+x-2}-\frac{4}{x^2-4x+3}-\frac{10}{x^2-x-6}$

TEST 4 Solutions

1a) $\dfrac{4}{8x-4}$

$= \dfrac{4}{4(2x-1)}$

$= \dfrac{1}{2x-1}$, $x \neq \frac{1}{2}$

b) $\dfrac{2}{x} + \dfrac{5}{xy} + \dfrac{3}{y}$

$= \dfrac{2y + 5 + 3x}{xy}$, $x \neq 0$, $y \neq 0$

c) $5 + \dfrac{2}{x-y}$

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

$= \dfrac{5x - 5y + 2}{x-y}$, $x \neq y$

d) $\dfrac{5}{x^2-16} + \dfrac{2}{x^2-4x}$

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

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

$= \dfrac{5x + 2x + 8}{x(x+4)(x-4)}$

$= \dfrac{7x+8}{x(x+4)(x-4)}$, $x \neq 0, -4, 4$

e) $\dfrac{x}{x+3} - \dfrac{x-3}{x}$

$= \dfrac{x^2 - (x+3)(x-3)}{(x+3)x}$

$= \dfrac{x^2 - [x^2 - 3x + 3x - 9]}{x(x+3)}$

$= \dfrac{x^2 - x^2 + 9}{x(x+3)}$

$= \dfrac{9}{x(x+3)}$, $x \neq 0, -3$

f) $\dfrac{2}{3x+6} - \dfrac{4x}{x^2+2x}$

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

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

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

$= \dfrac{-10}{3(x+2)}$, $x \neq -2$

TEST 4 Solutions

1g) $\dfrac{x+1}{3x^2+6x+3} - \dfrac{1}{x^2+9x+8}$

$= \dfrac{x+1}{3[x^2+2x+1]} - \dfrac{1}{(x+1)(x+8)}$

$= \dfrac{\cancel{x+1}}{3(x+1)\cancel{(x+1)}} - \dfrac{1}{(x+1)(x+8)}$

$= \dfrac{1}{3(x+1)} - \dfrac{1}{(x+1)(x+8)}$

$= \dfrac{1(x+8) - 1(3)}{3(x+1)(x+8)}$

$= \dfrac{x+8-3}{3(x+1)(x+8)}$

$= \dfrac{x+5}{3(x+1)(x+8)}$, $x \neq -1, -8$

h) $\dfrac{5}{x^2+x-6} - \dfrac{3}{x^2-4x+4}$

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

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

$= \dfrac{5x-10-3x-9}{(x+3)(x-2)(x-2)}$

$= \dfrac{2x-19}{(x+3)(x-2)(x-2)}$