

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 5.2

Math 1090 Worksheet

FALL 2009

For practise only. Not to be submitted.

1. Simplify each of the following.

(a) $\frac{3x+9}{x^2-1} \cdot \frac{x+1}{2x^2+5x-3}$

(b) $\frac{2}{2x-5} + \frac{1}{x+1}$

(c) $\frac{1}{9-x^2} + \frac{1}{x-3}$

(d) $\frac{x-2}{x-4} - \frac{x+3}{x^2-2x-8}$

(e) $\frac{\frac{2}{x+2}-1}{1-\frac{3}{x+3}}$

(f) $x(x-4)^{-2} + 3(x-4)^{-1}$

2. Solve each of the following equations.

(a) $\frac{2}{x-5} + \frac{1}{x+5} = \frac{5x-5}{x^2-25}$

(b) $\frac{2}{x-5} + \frac{1}{x+5} = \frac{5x-1}{x^2-25}$

(c) $\frac{1}{x} + \frac{1}{x-6} = -\frac{2}{x^2}$

3. Find the domain of $f(x) = \frac{3x}{x^2+4x-12}$.

4. Find $(f \circ g)(x)$ and the domain of $f \circ g$ for each of the indicated pairs of functions.

(a) $f(x) = \frac{1}{x+3}, \quad g(x) = \frac{1}{x-3}$

(b) $f(x) = \frac{x}{x^2-4}, \quad g(x) = 2-x$

(c) $f(x) = \frac{2}{1-x^2}, \quad g(x) = \sqrt{4-x}$

5. If $f(x) = \frac{2}{3x+4}$ find $(f \circ f)(x)$ and state its domain.

6. Let $f(x) = \frac{\sqrt{x-3}}{x-5}$. Identify the range of its inverse function without solving for $f^{-1}(x)$ explicitly.