

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 1.5

Math 1090 Worksheet

FALL 2026

SOLUTIONS

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

$$(b) \frac{2}{2x-5} + \frac{1}{x+1} = \frac{2(x+1)}{(2x-5)(x+1)} + \frac{1(2x-5)}{(x+1)(2x-5)} = \frac{2x+2+2x-5}{(2x-5)(x+1)} \\ = \frac{4x-3}{(2x-5)(x+1)}$$

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

$$(d) \frac{x-2}{x-4} - \frac{x+3}{x^2-2x-8} = \frac{x-2}{x-4} - \frac{x+3}{(x-4)(x+2)} = \frac{(x-2)(x+2)}{(x-4)(x+2)} - \frac{x+3}{(x-4)(x+2)} \\ = \frac{x^2-4-x-3}{(x-4)(x+2)} = \frac{x^2-x-7}{(x-4)(x+2)}$$

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

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