

## Twentieth Set of Homework

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Due: Tuesday April 5

**Please note:** You should fully justify your answers.

### Equations with rational expressions

1. Solve each of the following equations:

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

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

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

$$(d) \frac{s}{2} - \frac{2}{s} = \frac{3s}{8}$$

$$(e) \frac{1}{5x} + \frac{2}{x^2} = \frac{3}{25}$$

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

$$(g) \frac{x+1}{x-2} - \frac{x+3}{x} = \frac{6}{x^2-2x}$$

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

$$(i) \frac{x+8}{x+3} + 2 = -\frac{3x+4}{10}$$

$$(j) \frac{x-4}{x^2-5x} = \frac{2}{x^2-25}$$

$$(k) \frac{5}{x+4} - \frac{3}{x-1} = \frac{2(x-10)+3}{x^2+3x-4}$$

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

$$(m) \frac{x}{x-3} - \frac{2}{x^2-x-6} = 10$$

2. Determine the value of the real number  $a$ , if  $x = 2$  is *not* a solution of the equation:

$$\frac{x-2}{ax^2+3x-10} = 0$$