

3.4 Solve Rational Equations and Inequalities Worksheet

This document was composed and formatted by Annie Bernatchez.

The course material originated from www.jensenmath.ca

1) Solve each equation algebraically.

a) $\frac{6}{2x-1} = 5$	b) $\frac{6}{x} = x - 5$
c) $1 = \frac{5}{3x^2 - 8x + 2}$	d) $\frac{x+5}{x-1} = \frac{x+1}{x-3}$
e) $\frac{3}{x+5} + \frac{4}{x} = 0$	f) $2x = 5 - \frac{3}{x}$
g) $\frac{2}{1-x} + \frac{3}{x+1} = \frac{1}{x}$	h) $\frac{3}{x-1} + 5 + \frac{2}{x} = 0$

2) Solve each inequality without using technology.

a) $\frac{4}{2x-3} < \frac{1}{x+4}$

b) $\frac{2x+3}{x-3} \geq \frac{6x-5}{3x+1}$

c) $\frac{(x-3)(2x-1)}{(x+4)(x-5)} > 0$

d) $\frac{2x^2+5x-3}{x^2+5x+4} \leq 0$

e) $\frac{4}{x-3} < 1$

f) $\frac{2x^2 + 5x - 3}{x^2 + 8x + 16} < 0$

g) $\frac{x}{x+3} > \frac{x}{x-1}$

h) $\frac{2x+3}{x} > \frac{x+1}{x}$

Answer Key

1) a) $x = 1.1$ b) $x = 6$ or $x = -1$ c) $x = 3$ or $x = -\frac{1}{3}$ d) $x = 7$ e) $x = -\frac{20}{7}$ f) $x = 1$ or $x = \frac{3}{2}$ g) $x = \frac{1}{5}$ h) $x = \pm\sqrt{0.4}$

2) a) $x < -\frac{19}{2}$ or $-4 < x < \frac{3}{2}$ b) $-\frac{1}{3} < x \leq \frac{6}{17}$ or $x > 3$ c) $x < -4$ or $\frac{1}{2} < x < 3$ or $x > 5$ d) $-4 < x \leq -3$ or $-1 < x \leq \frac{1}{2}$ e) $x < 3$ or $x > 7$ f) $-3 < x < \frac{1}{2}$ g) $x < -3$ or $0 < x < 1$ h) $x < -2$ or $x > 0$