

### 1.3 Linearne i kvadratne jednačine i nejednačine

1. Rešiti jednačine:

(a) $\frac{x-2}{2} + \frac{x+1}{4} = 3,$	(b) $\frac{x-7}{4} + 1 = \frac{3x-1}{5} - \frac{5x+1}{12},$
(c) $\frac{9x+7}{2} - \left(x - \frac{x-2}{7}\right) = 36,$	(d) $x - \left(\frac{3x+1}{5} - \frac{2x-7}{2}\right) = 5 - \frac{x+6}{2},$
(e) $1 - 0.5 \cdot (2x+2) = 0.25 \cdot (1-x) + \frac{1}{3} \cdot 2\frac{1}{4},$	(f) $4x - 5.2 = 1.5x + 4.8,$
(g) $5(x-2)(x+2) - 6 = (3x-5)^2 - (2x+3)^2,$	(h) $(2-x)(3-x) - (1-x)(5-x) = 0,$
(i) $\frac{2x-1}{2x+1} + \frac{8}{4x^2-1} = \frac{2x+1}{2x-1},$	(j) $\frac{1}{\frac{1}{x}-a} + \frac{1}{\frac{1}{x}+a} = \frac{2a^2}{1-a^2x^2},$
(k) $\frac{x+2}{x-1} - \frac{2x-1}{2x+2} = \frac{4x+1}{x^2-1},$	(l) $\frac{10}{3} - \frac{7x+2}{6x+18} = 2 + \frac{3x-1}{4x+12},$
(m) $\frac{2x-1}{x-3} - \frac{x^2-3x-4}{x^2+x-12} - \frac{x+16}{x+4} = 0,$	(n) $2x^2 + 5x = 0,$
(o) $x^2 - 2x + 1 = 0,$	(p) $x^2 - 4x + 5 = 0,$
(q) $(2x-3)^2 + (x-1)(x-2) = 2 - 11x,$	(r) $\frac{3}{4}x^2 - 1\frac{2}{3}x = \frac{1}{3}x^2 + x,$
(s) $\frac{x+4}{x-4} + \frac{x-4}{x+4} = 3\frac{1}{3},$	(t) $\frac{5-x}{5+x} + \frac{5+x}{5-x} = \frac{100}{25-x^2}.$

2. Rešiti nejednačine:

(a) $-3x - \frac{2}{3} \leq 1,$	(b) $5 \leq x - \frac{x+5}{5},$
(c) $0.8 - 0.8(x-5) \geq -0.2,$	(d) $\frac{2x+1}{3} - \frac{3x-2}{2} \geq -1,$
(e) $\frac{x}{6} - \frac{1-x}{4} > \frac{1+x}{3} + \frac{x-2}{24},$	(f) $1 + \frac{x-6}{3} - \frac{x}{2} \leq 3 + \frac{3+x}{4},$
(g) $x - \frac{1}{2} \left[ \frac{x}{3} - \frac{1}{2} \left( \frac{x}{4} - \frac{1}{3} \right) \right] \geq x - \frac{x-7}{12},$	(h) $(x-1)^2 - (x+1)^2 < -10 - x,$
(i) $(3x+1)(x-2) - 3(x+1)^2 > 0,$	(j) $\frac{1}{x-2} < 3,$
(k) $\frac{3x-1}{x-1} > 2,$	(l) $\frac{x+1}{x-1} > \frac{1}{x+2},$
(m) $\frac{(x-1)(x-2)}{x+1} > 0,$	(n) $3x^2 + 11x - 4 > 0,$
(o) $-x^2 - 7x - 12 \leq 0,$	(p) $10x^2 - 7x + 1 \leq 0,$
(q) $(2x-1)(3-x) \geq 0,$	(r) $x(1-x)(2-x) \leq 0.$

## Rešenja

1. (a)  $x = 5$ , (b)  $x = 7$ , (c)  $x = 9$ , (d)  $x = 3$ , (e)  $x = -\frac{4}{3}$ , (f)  $x = 4$ ,  
(g)  $x = 1$ , (h)  $x = -1$ , (i)  $x = 1$ , uslov  $x \neq \pm\frac{1}{2}$ , (j)  $x = \pm a$ , uslov  $x \neq \pm\frac{1}{a}$ ,  
(k) nema rešenja, uslov  $x \neq \pm 1$ , (l)  $x = \frac{47}{7}$ , uslov  $x \neq -3$ , (m)  $x = 16$ , uslov  $x \neq 3$ ,  
 $x \neq -4$ , (n)  $x = 0$  i  $x = -\frac{5}{2}$ , (o)  $x = 1$ , (p)  $x = 2 + i$  i  $x = 2 - i$ , (q)  $x = i$  i  
 $x = -i$ , (r)  $x = 0$  i  $x = \frac{32}{5}$ , (s)  $x = \pm\sqrt{34}$ , uslov  $x \neq \pm 4$ , (t) nema rešenja, uslov  
 $x \neq \pm 5$ .
2. (a)  $x \in \left[-\frac{5}{9}, +\infty\right)$ , (b)  $x \in \left[\frac{15}{2}, +\infty\right)$ , (c)  $x \in (-\infty, 8]$ , (d)  $x \in \left(-\infty, \frac{14}{5}\right]$ ,  
(e)  $x \in (12, +\infty)$ , (f)  $x \in \left[-\frac{57}{5}, +\infty\right)$ , (g)  $x \in (-\infty, -32]$ , (h)  $x \in \left(\frac{10}{3}, +\infty\right)$ ,  
(i)  $x \in \left(-\infty, -\frac{5}{11}\right]$ , (j)  $x \in (-\infty, -2) \cup \left(\frac{7}{3}, +\infty\right)$ , (k)  $x \in (-\infty, -1) \cup (1, +\infty)$ ,  
(l)  $x \in (-\infty, -2) \cup (1, +\infty)$ , (m)  $x \in (-1, 1) \cup (2, +\infty)$ , (n)  $x \in (-\infty, -4) \cup \left(\frac{1}{3}, +\infty\right)$ ,  
(o)  $x \in (-\infty, -4] \cup [-3, +\infty)$ , (p)  $x \in \left[\frac{1}{5}, \frac{1}{2}\right]$ , (q)  $x \in \left[\frac{1}{2}, 3\right]$ , (r)  $x \in (-\infty, 0] \cup [1, 2]$ .