CAFOUREK

1) $2x^5 - 3x^4 - 3x^3 + 6x^2 - 2x = 0$

$x(2x^4 - 3x^3 - 3x^2 + 6x - 2) = 0$

$x_1 = 0$

$\pm 1, \pm 2$

	2	-3	-3	6	-2
1	2	-1	-4	2	0
-1	2	-5	2	4	-6
2	2	1	-1	4	6
-2	2	-7	11	-16	30

$x_2 = 1$

Počet kořenů je 2.

CATOVREK

2) (a) $x^2 - 4 = 0$

(b) $x^2 + 5x - 3 = 0$

(c) $x^2 + 5x - 3 = 0$

(d) $x^2 + 4 = 0$

3) $x^4 - 4x^3 + 4x^2 - 4x + 3 \quad ; \quad x \in R$

$\searrow \pm 1, \pm 3$

	1	-4	4	-4	3
1	1	-3	1	-3	0
-1	1	-5	9	-13	16
3	1	-1	1	-1	0
-3	1	-7	25	-79	240

$(x^4 - 4x^3 + 4x^2 - 4x + 3) : (x^2 - 4x + 3) = x^2 + 1$

$x^2 - 4x + 3$

$x^4 - 4x^3 + 4x^2 - 4x + 3 = (x-1)(x-3)(x^2+1)$ $\quad K = \{1; 3\}$

4) $x^4 - 4x^3 + 4x^2 - 4x + 3 \quad ; \quad x \in C$

$(x-1)(x-3)(x^2+1)$

$x_1 = 1 \quad x_2 = 3$

$(x^2 - (-1)) = (x^2 - i^2) = (x+i)(x-i)$

$x_3 = -i \quad x_4 = i$

$(x-1)(x-3)(x+i)(x-i)$

$K = \{1; 3; i; -i\}$

CAFOUREK

5) (a) $(x-1)(x-2)(x-3) = (x^2-3x+2)(x-3) = x^3-3x^2-3x^2+9x+2x-6$

T=C

$= x^3-6x^2+11x-6$

(b) $(x-1)^2(x+2)^3 = (x^2-2x+1)(x^3+6x^2+12x+8) =$

T=R $= x^5+6x^4+12x^3+8x^2-2x^4-12x^3-24x^2-16x+x^3+6x^2+12x+8 =$

$= x^5+4x^4+x^3-10x^2-4x+8$

(c) kořeny $1; i$ $\quad i \notin R$

T=R

$\emptyset$

(d) $(x-1)(x-i) = x^2-ix-x+i = x^2-x-ix+i$

T=C

CAFOUREK

6. (a)

$2x+3y=8$
$3x-5y=-7 \quad /\cdot 2$ } $\cdot(-3)$ ⊕

$-19y=-38 \quad /(-19)$

$y=2$

$2x+2\cdot 3=8$

$x=1$

$K=\{[1;2]\}$

(b) $2x+3y=8 \quad /\cdot(-2)$
$4x+6y=8$ } ⊕

$0\neq -8$

$\emptyset$ žádné řešení.

$K=\emptyset$

(c) $2x+3y=8 \quad /\cdot 5$

$-10x-15y=-40$

$0=0$

↓

řešením jsou všechna $\mathbb{R}$.

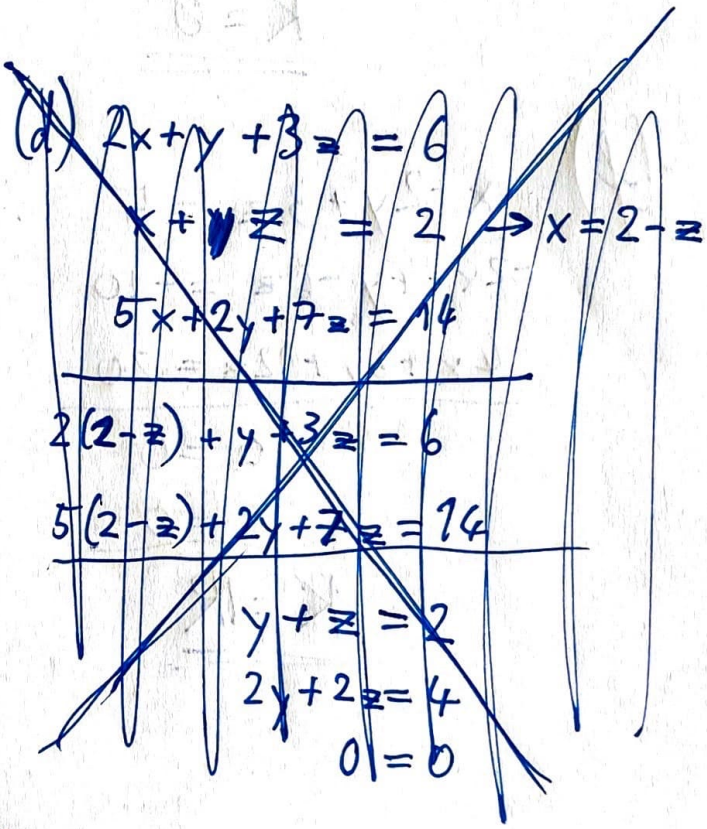
$K=\mathbb{R}$

(d) $2x+y+3z=6$
$x+z=2 \quad /\cdot(-2)$ } ⊕ $/\cdot(-5)$
$5x+2y+7z=14$ } ⊕

$y+z=2$
$2y+2z=4 \quad /\cdot(-2)$ } ⊕

$0=0$

$K=\mathbb{R}$



CAFOCREK

(e) $2x+y+3z=6$

$x+z=2$ $\quad \cdot(-2)$ ⊕

$5x+2y+7z=13$ $\quad \cdot(-5)$ ⊕

$y+z=2$ $\quad \cdot(-2)$ ⊕

$2y+2z=3$

$0 \neq -1$

$K=\emptyset$

(f) $x+2y+3z=5$ $\quad \cdot 2$ ⊕

$-2x-4y-6z=-10$ $\quad \cdot 2$ ⊕

$4x+8y+12z=20$

$0=0$

$0=0$

$K=\mathbb{R}$