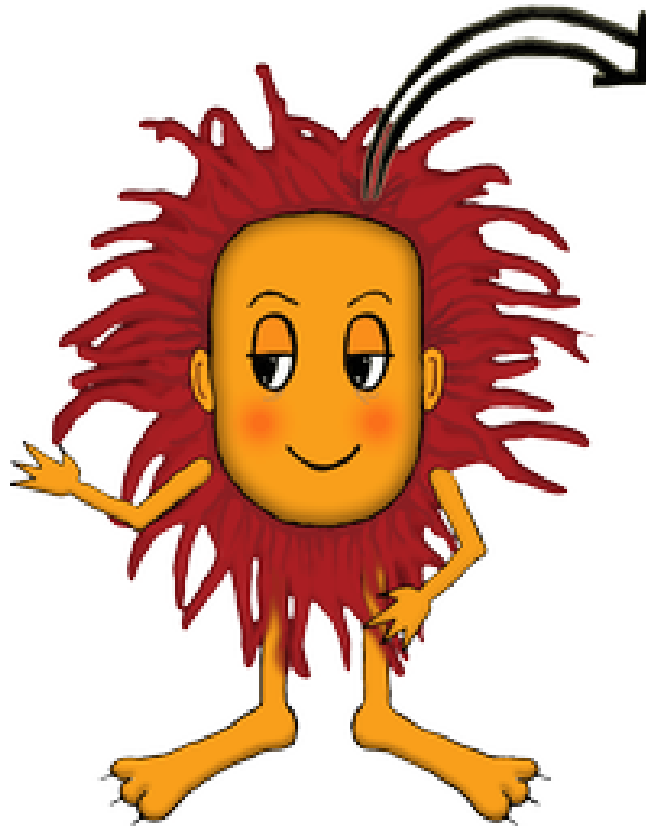


Velika logična pošast



Deljenje polinoma z racionalnimi ničlami

Dan je polinom $P(x)$. Poišči njegove racionalne ničle.
Z Ruffini-Hornerjevim algoritmom ga moramo deliti z $x-a$,
kjer za a vzamemo zaporedoma vse racionalne ničle.
Začnemo z najmanjšo.

1.

$$P(x) = 2x^4 - 11x^3 + 14x^2 + 9x - 18$$

2.

$$P(x) = 9x^4 - 21x^3 + x^2 + 9x + 2$$

3.

$$P(x) = 3x^2 + 8x - 3$$

4.

$$P(x) = 2x^2 + x - 3$$

5.

$$P(x) = 6x^4 - 23x^3 + 12x^2 + 11x - 6$$

6.

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

7.

$$P(x) = 9x^5 - 30x^4 + 34x^3 - 12x^2 - 3x + 2$$

8.

$$P(x) = 3x^4 - 2x^3 - 28x^2 + 18x + 9$$

9.

$$P(x) = 6x^4 + 11x^3 - 13x^2 - 16x + 12$$

10.

$$P(x) = 3x^2 + 4x + 1$$

11.

$$P(x) = 12x^5 - 28x^4 - 9x^3 + 46x^2 - 3x - 18$$

12.

$$P(x) = x^3 - 7x^2 + 15x - 9$$

13.

$$P(x) = 9x^5 - 45x^4 + 23x^3 + 101x^2 - 12x - 36$$

14.

$$P(x) = 3x^3 - 2x^2 - 12x + 8$$

15.

$$P(x) = x^3 - 3x + 2$$

16.

$$P(x) = 2x^2 - x - 1$$

17.

$$P(x) = 4x^3 - 4x^2 - 11x + 6$$

18.

$$P(x) = 3x^3 + 8x^2 + 7x + 2$$

19.

$$P(x) = x^3 - 3x^2 - x + 3$$

20.

$$P(x) = 3x^4 - 19x^3 + 31x^2 + 3x - 18$$

21.

$$P(x) = 3x^3 + 2x^2 - 7x + 2$$

22.

$$P(x) = 6x^5 + 31x^4 + 63x^3 + 63x^2 + 31x + 6$$

23.

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

24.

$$P(x) = 9x^3 - 27x^2 - x + 3$$

25.

$$P(x) = 2x^3 + x^2 - 18x - 9$$

26.

$$P(x) = 54x^5 + 9x^4 - 69x^3 - 22x^2 + 20x + 8$$

27.

$$P(x) = 2x^3 + x^2 - 8x - 4$$

28.

$$P(x) = 6x^4 + 5x^3 - 12x^2 - 5x + 6$$

29.

$$P(x) = 12x^4 - 4x^3 - 35x^2 + 9x + 18$$

30.

$$P(x) = 6x^4 - x^3 - 22x^2 + 11x + 6$$

31.

$$P(x) = 6x^5 + 7x^4 - 16x^3 - 9x^2 + 8x + 4$$

32.

$$P(x) = 6x^4 - 25x^3 + 30x^2 - 5x - 6$$

33.

$$P(x) = 9x^3 + 3x^2 - 8x - 4$$

34.

$$P(x) = 3x^2 - 7x + 2$$

35.

$$P(x) = 2x^3 - 3x^2 - 2x + 3$$

36.

$$P(x) = 3x^2 + 5x + 2$$

37.

$$P(x) = 3x^2 - 10x + 3$$

38.

$$P(x) = 2x^4 - x^3 - 14x^2 + 19x - 6$$

39.

$$P(x) = 2x^4 - 3x^3 - 6x^2 + 13x - 6$$

40.

$$P(x) = 6x^5 + 49x^4 + 136x^3 + 138x^2 + 18x - 27$$

41.

$$P(x) = 3x^3 + 14x^2 + 17x + 6$$

42.

$$P(x) = 18x^4 + 9x^3 - 14x^2 - 3x + 2$$

43.

$$P(x) = 18x^5 + 45x^4 + 34x^3 + 4x^2 - 4x - 1$$

44.

$$P(x) = 6x^4 + 17x^3 - 13x^2 - 33x - 9$$

45.

$$P(x) = 6x^3 - 13x^2 - 14x - 3$$

46.

$$P(x) = 8x^4 + 12x^3 - 6x^2 - 11x - 3$$

47.

$$P(x) = 6x^5 + 11x^4 - 25x^3 - 50x^2 + 4x + 24$$

48.

$$P(x) = x^2 - 1$$

49.

$$P(x) = 6x^3 + 11x^2 - x - 6$$

50.

$$P(x) = x^2 + 3x + 2$$

Rešitve:

1.

Ničle:

$$\left\{-1, \frac{3}{2}, 2, 3\right\}$$

$$P(x) = 2x^4 - 11x^3 + 14x^2 + 9x - 18$$

	2	-11	14	9	-18
-1		-2	13	-27	18
	2	-13	27	-18	0
$\frac{3}{2}$		3	-15	18	
2	2	-10	12	0	
		4	-12		
2	2	-6	0		
		6			
3	2	0			

2.

Ničle:

$$\left\{-\frac{1}{3}, -\frac{1}{3}, 1, 2\right\}$$

$$P(x) = 9x^4 - 21x^3 + x^2 + 9x + 2$$

	9	-21	1	9	2
$-\frac{1}{3}$		-3	8	-3	-2
	9	-24	9	6	0
$-\frac{1}{3}$		-3	9	-6	
	9	-27	18	0	
1		9	-18		
	9	-18	0		
2		18			
	9	0			

3.

Ničle:

$$\left\{-3, \frac{1}{3}\right\}$$

$$P(x) = 3x^2 + 8x - 3$$

	3	8	-3
-3		-9	3
	3	-1	0
$\frac{1}{3}$		1	
	3	0	

4.

Ničle:

$$\left\{-\frac{3}{2}, 1\right\}$$

$$P(x) = 2x^2 + x - 3$$

	2	1	-3
$-\frac{3}{2}$		-3	3
	2	-2	0
1		2	
	2	0	

5.

Ničle:

$$\left\{-\frac{2}{3}, \frac{1}{2}, 1, 3\right\}$$

$$P(x) = 6x^4 - 23x^3 + 12x^2 + 11x - 6$$

	6	-23	12	11	-6
$-\frac{2}{3}$		-4	18	-20	6
	6	-27	30	-9	0
$\frac{1}{2}$		3	-12	9	
	6	-24	18	0	
1		6	-18		
	6	-18	0		
3		18			
	6	0			

6.

Ničle:

$$\left\{-1, -1, \frac{1}{2}\right\}$$

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

	2	3	0	-1
-1		-2	-1	1
	2	1	-1	0
-1		-2	1	
	2	-1	0	
$\frac{1}{2}$		1		
	2	0		

7.

Ničle:

$$\left\{-\frac{1}{3}, \frac{2}{3}, 1, 1, 1\right\}$$

$$P(x) = 9x^5 - 30x^4 + 34x^3 - 12x^2 - 3x + 2$$

	9	-30	34	-12	-3	2
$-\frac{1}{3}$		-3	11	-15	9	-2
$\frac{2}{3}$	9	-33	45	-27	6	0
1		6	-18	18	-6	
1	9	-27	27	-9	0	
1		9	-18	9		
1	9	-18	9	0		
		9	-9			
1	9	-9	0			
		9				
1	9	0				

8.

Ničle:

$$\left\{-3, -\frac{1}{3}, 1, 3\right\}$$

$$P(x) = 3x^4 - 2x^3 - 28x^2 + 18x + 9$$

	3	-2	-28	18	9
-3		-9	33	-15	-9
$-\frac{1}{3}$	3	-11	5	3	0
1		-1	4	-3	
1	3	-12	9	0	
		3	-9		
3	3	-9	0		
		9			
3	3	0			

9.

Ničle:

$$\left\{-2, -\frac{3}{2}, \frac{2}{3}, 1\right\}$$

$$P(x) = 6x^4 + 11x^3 - 13x^2 - 16x + 12$$

	6	11	-13	-16	12
-2		-12	2	22	-12
$-\frac{3}{2}$	6	-1	-11	6	0
$\frac{2}{3}$		-9	15	-6	
1	6	-10	4	0	
		4	-4		
1	6	-6	0		
		6			
1	6	0			

10.

Ničle:

$$\{-1, -\frac{1}{3}\}$$

$$P(x) = 3x^2 + 4x + 1$$

	3	4	1
-1		-3	-1
	3	1	0
$-\frac{1}{3}$		-1	
	3	0	

11.

Ničle:

$$\{-1, -\frac{2}{3}, 1, \frac{3}{2}, \frac{3}{2}\}$$

$$P(x) = 12x^5 - 28x^4 - 9x^3 + 46x^2 - 3x - 18$$

	12	-28	-9	46	-3	-18
-1		-12	40	-31	-15	18
	12	-40	31	15	-18	0
$-\frac{2}{3}$		-8	32	-42	18	
	12	-48	63	-27	0	
1		12	-36	27		
	12	-36	27	0		
$\frac{3}{2}$		18	-27			
	12	-18	0			
$\frac{3}{2}$		18				
	12	0				

12.

Ničle:

$$\{1, 3, 3\}$$

$$P(x) = x^3 - 7x^2 + 15x - 9$$

	1	-7	15	-9
1		1	-6	9
	1	-6	9	0
3		3	-9	
	1	-3	0	
3		3		
	1	0		

13.

Ničle:

$$\left\{-1, -\frac{2}{3}, \frac{2}{3}, 3, 3\right\}$$

$$P(x) = 9x^5 - 45x^4 + 23x^3 + 101x^2 - 12x - 36$$

	9	-45	23	101	-12	-36
-1		-9	54	-77	-24	36
	9	-54	77	24	-36	0
$-\frac{2}{3}$		-6	40	-78	36	
	9	-60	117	-54	0	
$\frac{2}{3}$		6	-36	54		
	9	-54	81	0		
3		27	-81			
	9	-27	0			
3		27				
	9	0				

14.

Ničle:

$$\left\{-2, \frac{2}{3}, 2\right\}$$

$$P(x) = 3x^3 - 2x^2 - 12x + 8$$

	3	-2	-12	8
-2		-6	16	-8
	3	-8	4	0
$\frac{2}{3}$		2	-4	
	3	-6	0	
2		6		
	3	0		

15.

Ničle:

$$\{-2, 1, 1\}$$

$$P(x) = x^3 - 3x + 2$$

	1	0	-3	2
-2		-2	4	-2
	1	-2	1	0
1		1	-1	
	1	-1	0	
1		1		
	1	0		

16.

Ničle:

$$\left\{-\frac{1}{2}, 1\right\}$$

$$P(x) = 2x^2 - x - 1$$

	2	-1	-1
$-\frac{1}{2}$		-1	1
	2	-2	0
1		2	
	2	0	

17.

Ničle:

$$\left\{-\frac{3}{2}, \frac{1}{2}, 2\right\}$$

$$P(x) = 4x^3 - 4x^2 - 11x + 6$$

	4	-4	-11	6
$-\frac{3}{2}$		-6	15	-6
	4	-10	4	0
$\frac{1}{2}$		2	-4	
	4	-8	0	
2		8		
	4	0		

18.

Ničle:

$$\left\{-1, -1, -\frac{2}{3}\right\}$$

$$P(x) = 3x^3 + 8x^2 + 7x + 2$$

	3	8	7	2
-1		-3	-5	-2
	3	5	2	0
-1		-3	-2	
	3	2	0	
$-\frac{2}{3}$		-2		
	3	0		

19.

Ničle:

$$\{-1, 1, 3\}$$

$$P(x) = x^3 - 3x^2 - x + 3$$

	1	-3	-1	3
-1		-1	4	-3
	1	-4	3	0
1		1	-3	
	1	-3	0	
3		3		
	1	0		

20.

Ničle:

$$\left\{-\frac{2}{3}, 1, 3, 3\right\}$$

$$P(x) = 3x^4 - 19x^3 + 31x^2 + 3x - 18$$

	3	-19	31	3	-18
$-\frac{2}{3}$		-2	14	-30	18
	3	-21	45	-27	0
1		3	-18	27	
	3	-18	27	0	
3		9	-27		
	3	-9	0		
3		9			
	3	0			

21.

Ničle:

$$\left\{-2, \frac{1}{3}, 1\right\}$$

$$P(x) = 3x^3 + 2x^2 - 7x + 2$$

	3	2	-7	2
-2		-6	8	-2
	3	-4	1	0
$\frac{1}{3}$		1	-1	
	3	-3	0	
1		3		
	3	0		

22.

Ničle:

$$\left\{-\frac{3}{2}, -1, -1, -1, -\frac{2}{3}\right\}$$

$$P(x) = 6x^5 + 31x^4 + 63x^3 + 63x^2 + 31x + 6$$

	6	31	63	63	31	6
$-\frac{3}{2}$		-9	-33	-45	-27	-6
	6	22	30	18	4	0
-1		-6	-16	-14	-4	
	6	16	14	4	0	
-1		-6	-10	-4		
	6	10	4	0		
-1		-6	-4			
	6	4	0			
$-\frac{2}{3}$		-4				
	6	0				

23.

Ničle:

$$\{-1, -1, -\frac{1}{3}, 1\}$$

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

	3	4	-2	-4	-1
-1		-3	-1	3	1
	3	1	-3	-1	0
-1		-3	2	1	
	3	-2	-1	0	
$-\frac{1}{3}$		-1	1		
	3	-3	0		
1		3			
	3	0			

24.

Ničle:

$$\{-\frac{1}{3}, \frac{1}{3}, 3\}$$

$$P(x) = 9x^3 - 27x^2 - x + 3$$

	9	-27	-1	3
$-\frac{1}{3}$		-3	10	-3
	9	-30	9	0
$\frac{1}{3}$		3	-9	
	9	-27	0	
3		27		
	9	0		

25.

Ničle:

$$\{-3, -\frac{1}{2}, 3\}$$

$$P(x) = 2x^3 + x^2 - 18x - 9$$

	2	1	-18	-9
-3		-6	15	9
	2	-5	-3	0
$-\frac{1}{2}$		-1	3	
	2	-6	0	
3		6		
	2	0		

26.

Ničle:

$$\left\{-\frac{2}{3}, -\frac{2}{3}, -\frac{1}{2}, \frac{2}{3}, 1\right\}$$

$$P(x) = 54x^5 + 9x^4 - 69x^3 - 22x^2 + 20x + 8$$

	54	9	-69	-22	20	8
$-\frac{2}{3}$		-36	18	34	-8	-8
$-\frac{2}{3}$	54	-27	-51	12	12	0
$-\frac{2}{3}$		-36	42	6	-12	
$-\frac{2}{3}$	54	-63	-9	18	0	
$-\frac{1}{2}$		-27	45	-18		
$-\frac{1}{2}$	54	-90	36	0		
$\frac{2}{3}$		36	-36			
$\frac{2}{3}$	54	-54	0			
1		54				
1	54	0				

27.

Ničle:

$$\left\{-2, -\frac{1}{2}, 2\right\}$$

$$P(x) = 2x^3 + x^2 - 8x - 4$$

	2	1	-8	-4
-2		-4	6	4
-2	2	-3	-2	0
$-\frac{1}{2}$		-1	2	
$-\frac{1}{2}$	2	-4	0	
2		4		
2	2	0		

28.

Ničle:

$$\left\{-\frac{3}{2}, -1, \frac{2}{3}, 1\right\}$$

$$P(x) = 6x^4 + 5x^3 - 12x^2 - 5x + 6$$

	6	5	-12	-5	6
$-\frac{3}{2}$		-9	6	9	-6
$-\frac{3}{2}$	6	-4	-6	4	0
-1		-6	10	-4	
-1	6	-10	4	0	
$\frac{2}{3}$		4	-4		
$\frac{2}{3}$	6	-6	0		
1		6			
1	6	0			

29.

Ničle:

$$\left\{-\frac{3}{2}, -\frac{2}{3}, 1, \frac{3}{2}\right\}$$

$$P(x) = 12x^4 - 4x^3 - 35x^2 + 9x + 18$$

	12	-4	-35	9	18
$-\frac{3}{2}$		-18	33	3	-18
$\frac{1}{2}$	12	-22	-2	12	0
$-\frac{2}{3}$		-8	20	-12	
$\frac{1}{3}$	12	-30	18	0	
1		12	-18		
$\frac{1}{2}$	12	-18	0		
$\frac{3}{2}$		18			
$\frac{1}{2}$	12	0			

30.

Ničle:

$$\left\{-2, -\frac{1}{3}, 1, \frac{3}{2}\right\}$$

$$P(x) = 6x^4 - x^3 - 22x^2 + 11x + 6$$

	6	-1	-22	11	6
-2		-12	26	-8	-6
$\frac{1}{3}$	6	-13	4	3	0
$-\frac{1}{3}$		-2	5	-3	
$\frac{1}{3}$	6	-15	9	0	
1		6	-9		
$\frac{1}{2}$	6	-9	0		
$\frac{3}{2}$		9			
$\frac{1}{2}$	6	0			

31.

Ničle:

$$\left\{-2, -\frac{2}{3}, -\frac{1}{2}, 1, 1\right\}$$

$$P(x) = 6x^5 + 7x^4 - 16x^3 - 9x^2 + 8x + 4$$

	6	7	-16	-9	8	4
-2		-12	10	12	-6	-4
$\frac{1}{3}$	6	-5	-6	3	2	0
$-\frac{2}{3}$		-4	6	0	-2	
$\frac{1}{3}$	6	-9	0	3	0	
$-\frac{1}{2}$		-3	6	-3		
$\frac{1}{2}$	6	-12	6	0		
1		6	-6			
$\frac{1}{2}$	6	-6	0			
1		6				
$\frac{1}{2}$	6	0				

32.

Ničle:

$$\left\{-\frac{1}{3}, 1, \frac{3}{2}, 2\right\}$$

$$P(x) = 6x^4 - 25x^3 + 30x^2 - 5x - 6$$

	6	-25	30	-5	-6
$-\frac{1}{3}$		-2	9	-13	6
	6	-27	39	-18	0
1		6	-21	18	
	6	-21	18	0	
$\frac{3}{2}$		9	-18		
	6	-12	0		
2		12			
	6	0			

33.

Ničle:

$$\left\{-\frac{2}{3}, -\frac{2}{3}, 1\right\}$$

$$P(x) = 9x^3 + 3x^2 - 8x - 4$$

	9	3	-8	-4
$-\frac{2}{3}$		-6	2	4
	9	-3	-6	0
$-\frac{2}{3}$		-6	6	
	9	-9	0	
1		9		
	9	0		

34.

Ničle:

$$\left\{\frac{1}{3}, 2\right\}$$

$$P(x) = 3x^2 - 7x + 2$$

	3	-7	2
$\frac{1}{3}$		1	-2
	3	-6	0
2		6	
	3	0	

35.

Ničle:

$$\{-1, 1, \frac{3}{2}\}$$

$$P(x) = 2x^3 - 3x^2 - 2x + 3$$

	2	-3	-2	3
-1		-2	5	-3
	2	-5	3	0
1		2	-3	
	2	-3	0	
$\frac{3}{2}$		3		
2	2	0		

36.

Ničle:

$$\{-1, -\frac{2}{3}\}$$

$$P(x) = 3x^2 + 5x + 2$$

	3	5	2
-1		-3	-2
	3	2	0
$-\frac{2}{3}$		-2	
	3	0	

37.

Ničle:

$$\{\frac{1}{3}, 3\}$$

$$P(x) = 3x^2 - 10x + 3$$

	3	-10	3
$\frac{1}{3}$		1	-3
	3	-9	0
3		9	
	3	0	

38.

Ničle:

$$\{-3, \frac{1}{2}, 1, 2\}$$

$$P(x) = 2x^4 - x^3 - 14x^2 + 19x - 6$$

	2	-1	-14	19	-6
-3		-6	21	-21	6
	2	-7	7	-2	0
$\frac{1}{2}$		1	-3	2	
	2	-6	4	0	
1		2	-4		
	2	-4	0		
2		4			
	2	0			

39.

Ničle:

$$\left\{-2, 1, 1, \frac{3}{2}\right\}$$

$$P(x) = 2x^4 - 3x^3 - 6x^2 + 13x - 6$$

	2	-3	-6	13	-6
-2		-4	14	-16	6
	2	-7	8	-3	0
1		2	-5	3	
	2	-5	3	0	
1		2	-3		
	2	-3	0		
$\frac{3}{2}$		3			
2	2	0			

40.

Ničle:

$$\left\{-3, -3, -\frac{3}{2}, -1, \frac{1}{3}\right\}$$

$$P(x) = 6x^5 + 49x^4 + 136x^3 + 138x^2 + 18x - 27$$

	6	49	136	138	18	-27
-3		-18	-93	-129	-27	27
	6	31	43	9	-9	0
-3		-18	-39	-12	9	
	6	13	4	-3	0	
$-\frac{3}{2}$		-9	-6	3		
2	6	4	-2	0		
-1		-6	2			
	6	-2	0			
$\frac{1}{3}$		2				
3	6	0				

41.

Ničle:

$$\left\{-3, -1, -\frac{2}{3}\right\}$$

$$P(x) = 3x^3 + 14x^2 + 17x + 6$$

	3	14	17	6
-3		-9	-15	-6
	3	5	2	0
-1		-3	-2	
	3	2	0	
$-\frac{2}{3}$		-2		
3	3	0		

42.

Ničle:

$$\left\{-1, -\frac{1}{2}, \frac{1}{3}, \frac{2}{3}\right\}$$

$$P(x) = 18x^4 + 9x^3 - 14x^2 - 3x + 2$$

	18	9	-14	-3	2
-1		-18	9	5	-2
	18	-9	-5	2	0
$-\frac{1}{2}$		-9	9	-2	
	18	-18	4	0	
$\frac{1}{3}$		6	-4		
	18	-12	0		
$\frac{2}{3}$		12			
	18	0			

43.

Ničle:

$$\left\{-1, -1, -\frac{1}{2}, -\frac{1}{3}, \frac{1}{3}\right\}$$

$$P(x) = 18x^5 + 45x^4 + 34x^3 + 4x^2 - 4x - 1$$

	18	45	34	4	-4	-1
-1		-18	-27	-7	3	1
	18	27	7	-3	-1	0
-1		-18	-9	2	1	
	18	9	-2	-1	0	
$-\frac{1}{2}$		-9	0	1		
	18	0	-2	0		
$-\frac{1}{3}$		-6	2			
	18	-6	0			
$\frac{1}{3}$		6				
	18	0				

44.

Ničle:

$$\left\{-3, -1, -\frac{1}{3}, \frac{3}{2}\right\}$$

$$P(x) = 6x^4 + 17x^3 - 13x^2 - 33x - 9$$

	6	17	-13	-33	-9
-3		-18	3	30	9
	6	-1	-10	-3	0
-1		-6	7	3	
	6	-7	-3	0	
$-\frac{1}{3}$		-2	3		
	6	-9	0		
$\frac{3}{2}$		9			
	6	0			

45.

Ničle:

$$\left\{-\frac{1}{2}, -\frac{1}{3}, 3\right\}$$

$$P(x) = 6x^3 - 13x^2 - 14x - 3$$

	6	-13	-14	-3
$-\frac{1}{2}$		-3	8	3
	6	-16	-6	0
$-\frac{1}{3}$		-2	6	
	6	-18	0	
3		18		
	6	0		

46.

Ničle:

$$\left\{-\frac{3}{2}, -\frac{1}{2}, -\frac{1}{2}, 1\right\}$$

$$P(x) = 8x^4 + 12x^3 - 6x^2 - 11x - 3$$

	8	12	-6	-11	-3
$-\frac{3}{2}$		-12	0	9	3
	8	0	-6	-2	0
$-\frac{1}{2}$		-4	2	2	
	8	-4	-4	0	
$-\frac{1}{2}$		-4	4		
	8	-8	0		
1		8			
	8	0			

47.

Ničle:

$$\left\{-2, -\frac{3}{2}, -1, \frac{2}{3}, 2\right\}$$

$$P(x) = 6x^5 + 11x^4 - 25x^3 - 50x^2 + 4x + 24$$

	6	11	-25	-50	4	24
-2		-12	2	46	8	-24
	6	-1	-23	-4	12	0
$-\frac{3}{2}$		-9	15	12	-12	
	6	-10	-8	8	0	
-1		-6	16	-8		
	6	-16	8	0		
$\frac{2}{3}$		4	-8			
	6	-12	0			
2		12				
	6	0				

48.

Ničle:

 $\{-1, 1\}$

$$P(x) = x^2 - 1$$

	1	0	-1
-1		-1	1
	1	-1	0
1		1	
	1	0	

49.

Ničle:

 $\{-\frac{3}{2}, -1, \frac{2}{3}\}$

$$P(x) = 6x^3 + 11x^2 - x - 6$$

	6	11	-1	-6
$-\frac{3}{2}$		-9	-3	6
	6	2	-4	0
-1		-6	4	
	6	-4	0	
$\frac{2}{3}$		4		
	6	0		

50.

Ničle:

 $\{-2, -1\}$

$$P(x) = x^2 + 3x + 2$$

	1	3	2
-2		-2	-2
	1	1	0
-1		-1	
	1	0	