

1. Найти поле из 8 элементов  $Z_2[x]/(x^3 + x + 1)Z_2[x]$ . Составить таблицы операций.

$$\{0, 1, x, x+1, x^2, x^2+1, x^2+x, x^2+x+1\} \quad x^3 = x+1$$

+	0	1	x	x+1	x <sup>2</sup>	x <sup>2</sup> +1	x <sup>2</sup> +x	x <sup>2</sup> +x+1
0	0	1	x	x+1	x <sup>2</sup>	x <sup>2</sup> +1	x <sup>2</sup> +x	x <sup>2</sup> +x+1
1	1	0	x+1	x	x <sup>2</sup> +1	x <sup>2</sup>	x <sup>2</sup> +x+1	x <sup>2</sup> +x
x	x	x+1	0	1	x <sup>2</sup> +x	x <sup>2</sup> +x+1	x <sup>2</sup>	x <sup>2</sup> +1
x+1	x+1	x	1	0	x <sup>2</sup> +x+1	x <sup>2</sup> +x	x <sup>2</sup> +1	x <sup>2</sup>
x <sup>2</sup>	x <sup>2</sup>	x <sup>2</sup> +1	x <sup>2</sup> +x	x <sup>2</sup> +x+1	0	1	x	x+1
x <sup>2</sup> +1	x <sup>2</sup> +1	x <sup>2</sup>	x <sup>2</sup> +x+1	x <sup>2</sup> +x	1	0	x+1	x
x <sup>2</sup> +x	x <sup>2</sup> +x	x <sup>2</sup> +x+1	x <sup>2</sup>	x <sup>2</sup> +1	x	x+1	0	1
x <sup>2</sup> +x+1	x <sup>2</sup> +x+1	x <sup>2</sup> +x	x <sup>2</sup> +1	x <sup>2</sup>	x+1	x	1	0

x	0	1	x	x+1	x <sup>2</sup>	x <sup>2</sup> +1	x <sup>2</sup> +x	x <sup>2</sup> +x+1
0	0	0	0	0	0	0	0	0
1	0	1	x	x+1	x <sup>2</sup>	x <sup>2</sup> +1	x <sup>2</sup> +x	x <sup>2</sup> +x+1
x	0	x	x <sup>2</sup>	x <sup>2</sup> +x	x+1	1	x <sup>2</sup> +x+1	x <sup>2</sup> +1
x+1	0	x+1	x <sup>2</sup> +x	x <sup>2</sup> +1	x <sup>2</sup> +x+1	x <sup>2</sup>	1	x
x <sup>2</sup>	0	x <sup>2</sup>	x+1	x <sup>2</sup> +x+1	x <sup>2</sup> +x	x	x <sup>2</sup> +1	1
x <sup>2</sup> +1	0	x <sup>2</sup> +1	1	x <sup>2</sup>	x	x <sup>2</sup> +x+1	x+1	x <sup>2</sup> +x
x <sup>2</sup> +x	0	x <sup>2</sup> +x	x <sup>2</sup> +x+1	1	x <sup>2</sup> +1	x+1	x	x <sup>2</sup>
x <sup>2</sup> +x+1	0	x <sup>2</sup> +x+1	x <sup>2</sup> +1	x	1	x <sup>2</sup> +x	x <sup>2</sup>	x+1

2. Найти поле из 9 элементов  $Z_3[x]/(x^2 + 1)Z_3[x]$ . Составить таблицы операций.

$$0, 1, 2, x, x+1, x+2, 2x, 2x+1, 2x+2 \quad x^2 = -1 = 2$$

Аналогично