

| + | 0 | 1 | 2 | x | 2x | x+1 | x+2 | 2x+1 | 2x+2 |
|------|------|------|------|------|------|------|------|------|------|
| 0 | 0 | 1 | 2 | x | 2x | x+1 | x+2 | 2x+1 | 2x+2 |
| 1 | 1 | 2 | 0 | x+1 | 2x+1 | x+2 | x | 2x+2 | 2x |
| 2 | 2 | 0 | 1 | x+2 | 2x+2 | x | x+1 | 2x | 2x+1 |
| x | x | x+1 | x+2 | 2x | 0 | 2x+1 | 2x+2 | 1 | 2 |
| 2x | 2x | 2x+1 | 2x+2 | 0 | x | 1 | 2 | x+1 | x+2 |
| x+1 | x+1 | x+2 | x | 2x+1 | 1 | 2x+2 | 2x | 2 | 0 |
| x+2 | x+2 | x | x+1 | 2x+2 | 2 | 2x | 2x+1 | 0 | 1 |
| 2x+1 | 2x+1 | 2x+2 | 2x | 1 | x+1 | 2 | 0 | x+2 | x |
| 2x+2 | 2x+2 | 2x | 2x+1 | 2 | x+2 | 0 | 1 | x | x+1 |

| • | 0 | 1 | 2 | x | 2x | x+1 | x+2 | 2x+1 | 2x+2 |
|------|---|------|------|------|------|------|------|------|------|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 2 | x | 2x | x+1 | x+2 | 2x+1 | 2x+2 |
| 2 | 0 | 2 | 1 | 2x | x | 2x+2 | 2x+1 | x+2 | x+1 |
| x | 0 | x | 2x | 2 | 1 | x+2 | 2x+2 | x+1 | 2x+1 |
| 2x | 0 | 2x | x | 1 | 2 | 2x+1 | x+1 | 2x+2 | x+2 |
| x+1 | 0 | x+1 | 2x+2 | x+2 | 2x+1 | 2x | 1 | 2 | x |
| x+2 | 0 | x+2 | 2x+1 | 2x+2 | x+1 | 1 | x | 2x | 2 |
| 2x+1 | 0 | 2x+1 | x+2 | x+1 | 2x+2 | 2 | 2x | x | 1 |
| 2x+2 | 0 | 2x+2 | x+1 | 2x+1 | x+2 | x | 2 | 1 | 2x |

$$GF(9) = Z_3[x]/(x^2 + 1) = (\{0, 1, 2, x, 2x, x+1, x+2, 2x+1, 2x+2\}, +, \cdot)$$