

**Индивидуальное задание. Экстремум функции нескольких переменных**

Найти точки экстремума функции  $f(x, y, z)$ .

Вариант 1

$$f(x, y, z) = -2xy - 4xz - 5x - 4y^2 + 4yz + 2y - 3z^2 + 5z$$

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Вариант 2

$$f(x, y, z) = -3x^2 + 4xy - 4xz - 5x + 4y^2 - yz + 2y - 5z^2 + 4z$$

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Вариант 3

$$f(x, y, z) = -5x^2 - 5xy - 5xz - 2x + y^2 + yz + 3y - 4z^2 + 4z$$

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Вариант 4

$$f(x, y, z) = 4x^2 - 4xy - 2xz - 4x - 4y^2 + 5yz + 3y - 2z^2 + z$$

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Вариант 5

$$f(x, y, z) = -5x^2 - 4xy + xz - 3x - y^2 - yz + 2y + 5z^2$$

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Вариант 6

$$f(x, y, z) = -x^2 - 5xy - 4xz + 5x - 3z^2 - 2z$$

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Вариант 7

$$f(x, y, z) = -x^2 + 2xy + 4xz + y^2 + 5yz - z^2$$

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Вариант 8

$$f(x, y, z) = -2x^2 - 5xy - 5xz - 3x - 3y^2 - yz + y - z^2 - 4z$$

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Вариант 9

$$f(x, y, z) = 2x^2 + xy - 4xz - 4x + 2y^2 - yz + y + 4z^2 + z$$

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Вариант 10

$$f(x, y, z) = -4x^2 - xy + xz - 2y^2 + z^2 + z$$

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Вариант 11

$$f(x, y, z) = -3x^2 - xy + 4xz + 3x + 2y^2 + 4yz - 2y - 4z^2 - 3z$$

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Вариант 12

$$f(x, y, z) = -4x^2 + 3xy - 5xz + 5x - 2y^2 - 4yz + 5y + z^2 + 4z$$

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Вариант 13

$$f(x, y, z) = -4x^2 + xy + 4xz + x + 3y^2 - 5yz - 3z^2 + 3z$$

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Вариант 14

$$f(x, y, z) = -x^2 + 5xy - xz + 4x - 5y^2 - 3yz + 3y - 5z^2 - z$$

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Вариант 15

$$f(x, y, z) = -xy - 4xz - y^2 + 2yz - 5z^2 + 4z$$

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Вариант 16

$$f(x, y, z) = -4x^2 - 4xy - 5xz + x - 3y^2 - 3yz - 3y + 3z^2 - 3z$$

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Вариант 17

$$f(x, y, z) = -5x^2 + 2xy - 5xz - 3x + y^2 - 5yz - y - 2z^2 - 2z$$

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Вариант 18

$$f(x, y, z) = 2x^2 + 4xy - xz + 4x + 3y^2 - 4yz + 2y + 3z^2 + 2z$$

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Вариант 19

$$f(x, y, z) = -2x^2 + 2xy + 2xz + 2x - 4y^2 + 3yz - 2y + 2z^2 - 3z$$

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Вариант 20

$$f(x, y, z) = x^2 + 3xy - 3xz - 4x - 5y^2 + y - z^2 - 2z$$

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Вариант 21

$$f(x, y, z) = 4x^2 + xz - x - 2y^2 - 3yz - 2y - 2z^2 + 2z$$

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Вариант 22

$$f(x, y, z) = 5xy - xz + 2x + 4y^2 + 3yz - 3y - 2z^2$$

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Вариант 23

$$f(x, y, z) = -5xy + 4xz - 2x + 3y^2 - 5yz + 4y - 5z^2 + 5z$$

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Вариант 24

$$f(x, y, z) = -x^2 + 2xz + 4x + 2yz - y - 5z^2 - z$$

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Вариант 25

$$f(x, y, z) = -3x^2 - 4xy - 3x - 5y^2 - 3yz - y + 4z^2 - z$$

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Вариант 26

$$f(x, y, z) = -4x^2 - xy - 4xz - 3x - 5y^2 - 5yz - y + 4z^2 + 5z$$

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Вариант 27

$$f(x, y, z) = -x^2 - 4xy + 5x - 2y^2 - 5yz - 5y + 2z^2 - 4z$$

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Вариант 28

$$f(x, y, z) = 2x^2 - 5xy + 3xz + x + 2y^2 + yz + 5y - 5z^2 + 3z$$

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Вариант 29

$$f(x, y, z) = -4x^2 + 2xy - 4xz - 5x + 4y^2 - yz - 4y - 2z^2 - 5z$$

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Вариант 30

$$f(x, y, z) = -2x^2 + 5xy - 3xz - y^2 - 4yz + 2y + 5z^2 - z$$

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Вариант 31

$$f(x, y, z) = 3x^2 + xy - xz + 5x + y^2 + 2yz - 4y + 2z^2 - 3z$$

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Вариант 32

$$f(x, y, z) = -3x^2 - 4xy - xz - 2x - y^2 + 2yz - 5y + 3z^2 - 2z$$

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Вариант 33

$$f(x, y, z) = -3x^2 + xz - y^2 - 2yz + y + 5z^2 - 4z$$

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Вариант 34

$$f(x, y, z) = 4x^2 - 5xy - 2xz + 3x - y^2 + 4yz + 3y - 3z^2 + z$$

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Вариант 35

$$f(x, y, z) = -2x^2 - 5xy + 2xz - 4x + y^2 - yz - 2z^2 + 3z$$

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Вариант 36

$$f(x, y, z) = -4x^2 - xy + 5xz - x + y^2 - yz + 4y - 3z^2 + 4z$$

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Вариант 37

$$f(x, y, z) = x^2 - 5xy - 2xz + 2x + 5y^2 + 4yz - 5y - 3z^2 - 5z$$

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Вариант 38

$$f(x, y, z) = -3x^2 + 2xy - 2xz + 2x - 5y^2 - 4yz - 4y - z^2$$

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Вариант 39

$$f(x, y, z) = 5x^2 - 3xy - 3xz + 2x + 5y^2 + 3yz + 5z^2 + 4z$$

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Вариант 40

$$f(x, y, z) = -3x^2 + 4xy - xz - x - 5yz - 2z^2$$

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Вариант 41

$$f(x, y, z) = 5x^2 + 3xy + xz - 3x + 4y^2 + 2yz - 4y + 4z^2 + z$$

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Вариант 42

$$f(x, y, z) = -2x^2 - 5xz + x + 2y^2 - 2yz + 3y - 5z^2 - 2z$$

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Вариант 43

$$f(x, y, z) = 3x^2 - 3xy - xz + 4x - y^2 - 2yz + 4y - 4z^2 - z$$

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Вариант 44

$$f(x, y, z) = 5x^2 - 5xy - xz + 5x - 5y^2 + yz - y - 4z^2 + 2z$$

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Вариант 45

$$f(x, y, z) = 3x^2 + 2xy - 2xz + 3x + 2y^2 - 4yz + 5y + 5z^2 + 2z$$

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Вариант 46

$$f(x, y, z) = 5xy + 2xz - 4x + y^2 + 2yz + 3y - 3z^2 + z$$

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Вариант 47

$$f(x, y, z) = -4x^2 + xy + xz - x + 3y^2 - 3yz - 5y - z^2 + 4z$$

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Вариант 48

$$f(x, y, z) = -5x^2 - xy - 2xz + 4x + 3y^2 - 3yz - 4y - 2z^2 + z$$

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Вариант 49

$$f(x, y, z) = 3x^2 + 4xy + 3xz - x - 2y^2 + 5yz - y - z^2 - 3z$$

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Вариант 50

$$f(x, y, z) = -4x^2 - 2xz + 2y^2 - 5yz + y - z^2 - 3z$$

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Вариант 51

$$f(x, y, z) = -4x^2 - 5xy - xz - 3x - y^2 - 5yz - 2z^2 - z$$

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Вариант 52

$$f(x, y, z) = -5x^2 - 3xy - 2xz - x + y^2 - 2yz - 3y - 4z^2 + 3z$$

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Вариант 53

$$f(x, y, z) = -x^2 + 5xy + 5xz - 4x + 2y^2 - 2yz - 2y - 4z^2 - 5z$$

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Вариант 54

$$f(x, y, z) = 3x^2 - 3xz - x - 2y^2 + 5yz + 2y - 5z^2 + z$$

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Вариант 55

$$f(x, y, z) = xy - 5xz - 4x - 5y^2 - 2yz + y - 3z^2 - 5z$$

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Вариант 56

$$f(x, y, z) = -4x^2 - 4xy - 4x - 4y^2 + 4yz - 2y$$

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Вариант 57

$$f(x, y, z) = -3x^2 + 5xy - 5xz + 4x - 4yz + 2z^2 + 2z$$

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Вариант 58

$$f(x, y, z) = -4x^2 - xy - xz - 3x - 2y^2 + 2yz + y + 2z^2 - 4z$$

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Вариант 59

$$f(x, y, z) = 4x^2 - 3xy - 2xz + 5x + 2yz + 4y - z^2 + 2z$$

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Вариант 60

$$f(x, y, z) = -4xy + 5xz - 2y^2 - 5yz - 5y - 4z^2 + 5z$$

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Вариант 61

$$f(x, y, z) = 5x^2 - 4xy - 4xz + 5x + 5y^2 + 3yz + 2y + 5z^2 + 2z$$

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Вариант 62

$$f(x, y, z) = -5x^2 - xy + xz - x - 4y^2 - yz + 5y + 5z^2 + 3z$$

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Вариант 63

$$f(x, y, z) = -3x^2 - 3xy + xz - 3x + 4y^2 - yz - 5y - 4z^2 + 4z$$

---

Вариант 64

$$f(x, y, z) = -2x^2 + xy - 4xz + 5x + 4y^2 - 4yz - y - 4z^2 + 3z$$

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Вариант 65

$$f(x, y, z) = 2x^2 + xy + 3xz + x - 4y^2 + 5yz + 2y - z^2 - 5z$$

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Вариант 66

$$f(x, y, z) = -3x^2 - 2xy - 2xz + 5x - 2y^2 + 2yz + 2y + 3z^2 - 3z$$

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Вариант 67

$$f(x, y, z) = 3x^2 + 2xy + 2xz - 5x - 3y^2 - yz - y - 5z^2$$

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Вариант 68

$$f(x, y, z) = 3x^2 + 2xy - 2xz + 2x + 5y^2 - 5yz - 2y + 2z^2 - 2z$$

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Вариант 69

$$f(x, y, z) = 2x^2 - 4xy - 3xz - 3x - y^2 + yz + 3y - 5z^2 - 2z$$

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Вариант 70

$$f(x, y, z) = 3x^2 + 4xy + xz + 5y^2 - 2yz + 5y + 3z^2 - 3z$$

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Вариант 71

$$f(x, y, z) = -3x^2 + xy + 5xz + 5x + 4y^2 - 3yz - 2y - 3z^2 - 5z$$

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Вариант 72

$$f(x, y, z) = -3xy + 4xz - 3x - 5y^2 + 5yz - 3y + 2z^2 + 2z$$

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Вариант 73

$$f(x, y, z) = 3x^2 + 4xy + 5xz + x - 5y^2 - 3yz + 3y - 4z^2 + 5z$$

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Вариант 74

$$f(x, y, z) = -5x^2 + xy - x - 2y^2 - 2yz + 5y + 3z^2 - 4z$$

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Вариант 75

$$f(x, y, z) = -3x^2 + 3xy - 2xz - 4y^2 + 2y + 2z^2 + z$$

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Вариант 76

$$f(x, y, z) = -x^2 + 3xy + 2xz + 4x + y^2 - yz + y - 2z^2 + 2z$$

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Вариант 77

$$f(x, y, z) = -4x^2 - 2xy - 2xz + x - y^2 - 3yz + 5y + 2z^2 - z$$

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Вариант 78

$$f(x, y, z) = -4x^2 - 5xz - 2x - 5yz - 5y - z^2 - 4z$$

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Вариант 79

$$f(x, y, z) = -5x^2 + 2xy - 5xz - 3x - 5y^2 - 2yz + 4y + 5z$$

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Вариант 80

$$f(x, y, z) = -5x^2 - 3xy + xz - x - y^2 + 5yz + 5y + z^2 + 5z$$

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Вариант 81

$$f(x, y, z) = -3xy + 5xz + 2x - 3y^2 + 2yz + 4y - 5z^2 + 3z$$

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Вариант 82

$$f(x, y, z) = -x^2 - xy - 3xz - 5x + y^2 - 5yz + 3y - 3z^2 - 4z$$

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Вариант 83

$$f(x, y, z) = -x^2 - 5xy + 2xz - x - 4y^2 + y + 3z$$

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Вариант 84

$$f(x, y, z) = x^2 + xy - x - 4y^2 + 2yz - 3y - 2z^2 - 3z$$

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Вариант 85

$$f(x, y, z) = -4x^2 + 3xz - 3y^2 - 3yz - 4y + z^2$$

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Вариант 86

$$f(x, y, z) = 2x^2 - 5xy - 4xz + 3x - 2yz - 4y - 3z^2 - z$$

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Вариант 87

$$f(x, y, z) = -3x^2 - 5xy - xz + 5x + y^2 + 4yz + 2y - 5z^2$$

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Вариант 88

$$f(x, y, z) = -5x^2 + 3xy + 2xz + x - 4y^2 - 5yz + 3y - z^2 + 2z$$

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Вариант 89

$$f(x, y, z) = -2x^2 - 2xy + 2xz - 4x + 4y^2 - 5yz - 3y + 4z$$

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Вариант 90

$$f(x, y, z) = -3x^2 - 3xy + 5xz + 5x - 2yz - y - 2z^2 + 3z$$

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Вариант 91

$$f(x, y, z) = -4x^2 - 5xy + xz - x + 5y^2 - 3yz - 3y - z^2 - 3z$$

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Вариант 92

$$f(x, y, z) = 4x^2 + 4xy - 5x + 2y^2 - 2yz + 5y + 4z^2$$

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Вариант 93

$$f(x, y, z) = -5xy + xz - 2y^2 + 5y - 2z^2$$

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Вариант 94

$$f(x, y, z) = x^2 + xy + 3xz - 4x - 3y^2 - yz - 3y - 2z^2 - 2z$$

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Вариант 95

$$f(x, y, z) = -3xy - xz - 5x + y^2 - 3y - z^2 - z$$

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Вариант 96

$$f(x, y, z) = -x^2 - 3xy + xz + 4x + 3yz - 4z^2 - 3z$$

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Вариант 97



$$f(x, y, z) = 2x^2 - 3xz + 3x - 5y^2 + 4yz - 3y - 4z^2 + 4z$$

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Вариант 98

$$f(x, y, z) = -3x^2 + 3xy - 5xz - 3y^2 + 4yz + 2y + z^2 + 3z$$

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Вариант 99

$$f(x, y, z) = 3x^2 + xy - 3xz + 5x - 5y^2 - 2yz - y - 4z^2 + 2z$$

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Вариант 100

$$f(x, y, z) = 3x^2 + xy + 3xz - 3x + 5y^2 + 4yz - 5y + 2z^2 - z$$

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Вариант 101

$$f(x, y, z) = 4x^2 + 5xy - 5xz + 4x - 2y^2 - 4yz - y - 2z$$

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Вариант 102

$$f(x, y, z) = 5x^2 + 3xy - 3xz - 3x + 2y^2 + 3yz - y + 3z^2 - 3z$$

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Вариант 103

$$f(x, y, z) = -5x^2 + 4xy - 4xz - 3x + 2y^2 + 3yz + 3y - 3z^2 + 3z$$

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Вариант 104

$$f(x, y, z) = x^2 - 2xz - 3x - y^2 + 2yz + 3y - 4z^2 + 4z$$

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Вариант 105

$$f(x, y, z) = -4x^2 - xz - 5x - 5y^2 + 5yz - 2y + 4z^2 - 2z$$

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Вариант 106

$$f(x, y, z) = -3x^2 + 4xy + 2xz + 3x + y^2 + y - 5z^2 + z$$

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Вариант 107

$$f(x, y, z) = 4x^2 + 5xy - 3xz + 3x - 3y^2 - 4yz + 3y - z^2 - 5z$$

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Вариант 108

$$f(x, y, z) = -4x^2 - xy + 3xz + x + y^2 - 4yz - y - 3z^2 - 5z$$

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Вариант 109

$$f(x, y, z) = -2x^2 - 3xy - 4xz - 2x - 2yz - y - 5z^2 - z$$

---

Вариант 110

$$f(x, y, z) = -3x^2 + 2xy - 5xz - 4x - 2y^2 + yz + 5y - 2z^2 - z$$

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Вариант 111

$$f(x, y, z) = x^2 + 3xy - 4xz - 4x - 4y^2 - 4yz - 3y + z^2 + 3z$$

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Вариант 112

$$f(x, y, z) = x^2 + xy - 5xz - 4x - 2y^2 - 3yz + y + 5z^2 + 4z$$

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Вариант 113

$$f(x, y, z) = -2x^2 - xy - 3xz - x + 2y^2 - 2yz - y - 5z^2$$

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Вариант 114

$$f(x, y, z) = -5x^2 + 4xy - xz + 5x + 3y^2 - 3z^2 - 3z$$

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Вариант 115

$$f(x, y, z) = x^2 - 2xy - 5xz + 5x - 4y^2 + 4yz - 2y + z^2 + 4z$$

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Вариант 116

$$f(x, y, z) = -3x^2 - 5xy - 3xz - x - y^2 + 4yz + 3y + 2z^2$$

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Вариант 117

$$f(x, y, z) = -5x^2 + 4xy + 5xz + 3x - y^2 + 3yz - y - 3z^2 - z$$

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Вариант 118

$$f(x, y, z) = -5x^2 - 5xy + 3xz - 4x + 3y^2 - 4yz - 5y - 2z^2 - 3z$$

---

Вариант 119

$$f(x, y, z) = -x^2 + 5xy + 3xz + x + 3y^2 + 2yz + 4y - 5z^2 + 4z$$

---

Вариант 120

$$f(x, y, z) = -x^2 - 3xy + xz - 3x + 5y^2 - 3yz - 5y - z^2 - 4z$$

---

Вариант 121

$$f(x, y, z) = 4x^2 - 3xy + xz + 5x - 5y^2 - yz + 5y + 5z$$

---

Вариант 122

$$f(x, y, z) = x^2 - 5x - 4y^2 - 4y - 3z^2 - 3z$$

---

Вариант 123

$$f(x, y, z) = -3x^2 + xy + 2xz - 3x + y^2 - 4yz + 4y - 2z^2 - 3z$$

---

Вариант 124

$$f(x, y, z) = -5x^2 + xy - 3xz - x - 3yz + z^2 + 4z$$

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Вариант 125

$$f(x, y, z) = -4x^2 + xy - 2xz - 3x + 2y^2 - 2yz + 3y + 5z$$

---

Вариант 126

$$f(x, y, z) = 3x^2 + xy - 4xz + x + 4y^2 - yz + 5y + 4z^2 - 4z$$

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Вариант 127

$$f(x, y, z) = xy - 4xz - 3x - 2y^2 - 4y - 5z^2 - 3z$$

---

Вариант 128

$$f(x, y, z) = -2x^2 - 4xy + 4xz - 2x - 3y^2 + yz$$

---

Вариант 129

$$f(x, y, z) = -x^2 - 3xy - xz - 4x - 3y^2 + 2y + 5z^2 + 3z$$

---

Вариант 130

$$f(x, y, z) = -2x^2 - xy + 2xz + 3x - 3y^2 - 4yz + 2y + z^2 + 3z$$

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Вариант 131

$$f(x, y, z) = x^2 - xy + 5xz - 2x - 3y^2 - 5yz + 4z^2 - 2z$$

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Вариант 132

$$f(x, y, z) = -4x^2 - xy + 5xz + x + 2y - z^2 - 5z$$

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Вариант 133

$$f(x, y, z) = -5x^2 - 2xy - 4xz + 2x + 3y^2 - 2yz - 2y - 4z^2 - 2z$$

---

Вариант 134

$$f(x, y, z) = 3x^2 - 5xy - 5xz - 5x - 2y^2 - yz - 4y - 4z^2 + 2z$$

---

Вариант 135

$$f(x, y, z) = -4x^2 - 5xy + xz - 5x + 2yz - 5y - 3z^2 + 2z$$

---

Вариант 136

$$f(x, y, z) = -3x^2 - 3xy + 2xz - 4x - 2y^2 - 3yz + 3y - 2z$$

---

Вариант 137

$$f(x, y, z) = x^2 + 3xy - 4xz + 4x - 2y^2 - 2yz - 5y + 3z$$

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Вариант 138

$$f(x, y, z) = -4x^2 - 3xy - 3xz + 2x - 5y^2 + 2yz - 3y$$

---

Вариант 139

$$f(x, y, z) = -4x^2 + 2xy + 3xz + 5x - y^2 - 2yz - 4y + z^2 + z$$

---

Вариант 140

$$f(x, y, z) = -5x^2 - xy + 2xz - 3x - y^2 + yz + y + 4z^2 - z$$

---

Вариант 141

$$f(x, y, z) = 3x^2 + 4xy + 2xz - x - 5y^2 - 4yz - 5y - 5z^2 + 5z$$

---

Вариант 142

$$f(x, y, z) = -5x^2 - 4xy + 4xz + x - 4y^2 + 5yz + 5z^2 - 5z$$

---

Вариант 143

$$f(x, y, z) = 5x^2 - xy - 4x + y^2 + 3yz + 2y + 3z^2 + 3z$$

---

Вариант 144

$$f(x, y, z) = -4x^2 - 2xy + 2xz - 4x - y^2 - 2yz - 2y + 5z^2 - 3z$$

---

Вариант 145

$$f(x, y, z) = -5x^2 - 3xy - xz - 5x + 2y^2 + 4yz + 5z$$

---

Вариант 146

$$f(x, y, z) = 5x^2 - 3xy + xz - x - 2y^2 - 4yz + 3y - 4z^2$$

---

Вариант 147

$$f(x, y, z) = -4x^2 - 4xy + 2xz + 5x + 2y^2 + 2yz - 4y - 2z^2 + 3z$$

---

Вариант 148

$$f(x, y, z) = 2x^2 - xy - 2xz + 4x - 5y^2 + 5yz + 5y - 5z^2 + 5z$$

---

Вариант 149

$$f(x, y, z) = -3x^2 + 5xy + 3xz + 5x - 5y^2 + 5y + z^2 - 2z$$

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