

Исследовать на экстремум следующие функции

N1

1. $z = y\sqrt{x} - 2y^2 - x + 14y.$

2. $z = x^3 + 8y^3 - 6xy + 5.$

3. $z = 1 + 15x - 2x^2 - xy - 2y^2.$

4. $z = 1 + 6x - x^2 - xy - y^2.$

5. $z = x^3 + y^2 - 6xy - 39x + 18y + 20.$

6. $z = 2x^3 + 2y^3 - 6xy + 5.$

7. $z = 3x^3 + 3y^3 - 9xy + 10.$

8. $z = x^2 + xy + y^2 + x - y + 1.$

9. $z = 4/(x-y) - x^2 - y^2.$

10. $z = 6(x-y) - 3x^2 - 3y^2.$

11. $z = x^2 + xy + y^2 - 6x - 9y.$

12. $z = (x-2)^2 + 2y^2 - 10.$

13. $z = (x-5)^2 + y^2 + 1.$

14. $z = x^3 + y^3 - 3xy.$

2

2) Найдите наибольшее и наименьшее значения функции $z = z(x, y)$ в области \bar{D} , ограниченной заданными линиями.

1. $z = 3x + y - xy$, $\bar{D}: y = x, y = 4, x = 0$.
2. $z = xy - x - 2y$, $\bar{D}: x = 3, y = x, y = 0$.
3. $z = x^2 + 2xy - 4x + 8y$, $\bar{D}: x = 0, x = 1, y = 0, y = 2$.
4. $z = 5x^2 - 3xy + y^2$, $\bar{D}: x = 0, x = 1, y = 0, y = 1$.
5. $z = x^2 + 2xy - y^2 - 4x$, $\bar{D}: x - y + 1 = 0, x = 3, y = 0$.
6. $z = x^2 + y^2 - 2x - 2y + 8$, $\bar{D}: x = 0, y = 0, x + y = 1$.
7. $z = 2x^3 - xy^2 + y^2$, $\bar{D}: x = 0, x = 1, y = 0, y = 6$.
8. $z = 3x + 6y - x^2 - xy - y^2$, $\bar{D}: x = 0, x = 1, y = 0, y = 2$.
9. $z = x^2 - 2y^2 + 4xy - 6x - 1$, $\bar{D}: x = 0, y = 0, x + y = 3$.
10. $z = x^2 + 2xy - 10$, $\bar{D}: y = 0, y = x^2 - 4$.
11. $z = xy - 2x - y$, $\bar{D}: x = 0, x = 3, y = 0, y = 4$.
12. $z = 0,5x^2 - xy$, $\bar{D}: x = 2, y = 2x^2, y = 0$.
13. $z = 3x^2 + 3y^2 - 2x - 2y + 2$, $\bar{D}: x = 0, y = 0, x + y = 1$.
14. $z = 2x^2 + 3y^2 + 1$, $\bar{D}: y = \sqrt{9 - \frac{9}{4}x^2}, y = 0$.