

Найдите все значения параметра a , при каждом из которых система уравнений $A \cdot (b+c) = A \cdot B + A \cdot C$

$$\begin{aligned} 2x^2 - 5xy + 2y^2 &= 0 \\ D &= 25y^2 - 4 \cdot 2 \cdot 2y^2 = 9y^2 \\ x_1 &= (5y + 3y) / 4 = 2y \\ x_2 &= (5y - 3y) / 4 = y/2 \end{aligned}$$

имеет ровно два решения.

$$\begin{aligned} 2x^2 + 2y^2 &= 5xy \\ 2x^2 + 2y^2 - 5xy &= 0 \\ 2x^2 + 2y^2 - xy - 4xy &= 0 \\ (2x^2 - xy) + (-4xy + 2y^2) &= 0 \\ x(2x - y) - 2y(2x - y) &= 0 \\ (x - 2y)(2x - y) &= 0 \\ x - 2y = 0 & \quad 2x - y = 0 \\ y = x/2 & \quad y = 2x \end{aligned}$$

$$\begin{aligned} (x-a)^2 + (2x-a)^2 &= 5a^4 \\ x^2 - 2ax + a^2 + 4x^2 - 4ax + a^2 &= 5a^4 \\ 5x^2 - 6ax + 2a^2 - 5a^4 &= 0 \end{aligned}$$

$$\begin{aligned} (x-a)^2 + (x/2-a)^2 &= 5a^4 \\ x^2 - 2ax + a^2 + x^2/4 - ax + a^2 &= 5a^4 \\ 5x^2/4 - 3ax + 2a^2 - 5a^4 &= 0 \end{aligned}$$

$$\begin{aligned} D_1 &= 0 & D_2 &= 0 \\ D_1 &= 36a^2 - 20(2a^2 - 5a^4) &= 0 \\ D_2 &= 9a^2 - 5(2a^2 - 5a^4) &= 0 \end{aligned}$$

$$\begin{aligned} 36a^2 - 20(2a^2 - 5a^4) &= 0 \\ 36a^2 - 40a^2 + 100a^4 &= 0 \\ -4a^2 + 25a^4 &= 0 \\ a^2(25a^2 - 1) &= 0 \\ a = 0 & \quad 25a^2 - 1 = 0 \\ & \quad a = +\sqrt{(1/25)} = +1/5 \end{aligned}$$

$$\begin{cases} 2x^2 + 2y^2 = 5xy, \\ (x-a)^2 + (y-a)^2 = 5a^4 \end{cases}$$

$$\left[\begin{array}{l} \text{S} \\ \text{S} \end{array} \right. \begin{array}{l} y = x/2 \\ (x-a)^2 + (y-a)^2 = 5a^4 \\ \\ y = 2x \\ (x-a)^2 + (y-a)^2 = 5a^4 \end{array}$$

$$D_1 > 0 \quad D_2 < 0$$

$$a^2(25a^2 - 1) > 0$$

$$a^2(25a^2 - 1) < 0$$

НОТ ПОССИБАЛ

Ответ: $+1/5$

$$\begin{aligned} \text{сл 1 } a &= 0 \\ x_1 &= (6 \cdot 0) / 10 = 0 \\ x_2 &= 2(3 \cdot 0) / 5 = 0 \\ \text{сл 2 } a &= 1/5 \\ x_1 &= (6 \cdot 1/5) / 10 = 3/50 = 0.06 \\ x_2 &= 2(3 \cdot 1/5) / 5 = 6/25 = 0.12 \\ \text{сл 3 } a &= -1/5 \\ x_1 &= -(6 \cdot 1/5) / 10 = -3/50 = -0.06 \\ x_2 &= -2(3 \cdot 1/5) / 5 = -6/25 = -0.12 \end{aligned}$$