

M<sub>9</sub>Rешите уравнение с неизвестным в знаменателе

od 9.1.

①

$$\frac{2}{x} - \frac{1}{1} = \frac{1}{x} - \frac{1}{2} \quad | \cdot 2x \quad x \neq 0$$

$$4 - 2x = 2 - x$$

$$-2x + x = 2 - 4$$

$$-x = -2$$

$$\boxed{x = 2}$$

zk:

$$L = \frac{2}{2} - 1 = 1 - 1 = 0$$

$$P = \frac{1}{2} - \frac{1}{2} = 0$$

$$L = P$$

②

$$\frac{2}{z} + \frac{3}{z} - 1 = \frac{3}{z} - \frac{3}{1} \quad | \cdot z \quad z \neq 0$$

$$2 + 3 - z = 3 - 3z$$

$$-z + 3z = 3 - 2 - 3$$

$$2z = -2$$

$$z = -2 : 2$$

$$\boxed{z = -1}$$

zk:

$$L = \frac{2}{-1} + \frac{3}{-1} - 1 = -2 - 3 - 1 = -6$$

$$P = \frac{3}{-1} - 3 = -3 - 3 = -6$$

$$L = P$$

③

$$\frac{1}{1} - \frac{2}{k} = \frac{13}{8} + \frac{1}{2k} \quad | \cdot 8k \quad k \neq 0$$

$$8k - 16 = 13k + 4$$

$$8k - 13k = 4 + 16$$

$$-5k = 20$$

$$k = 20 : (-5)$$

$$\boxed{k = -4}$$

zk:

$$L = 1 - \frac{2}{-4} = 1 + \frac{2}{4} = \frac{4+2}{4} = \frac{6}{4} = \frac{3}{2}$$

$$P = \frac{13}{8} + \frac{1}{2 \cdot (-4)} = \frac{13}{8} - \frac{1}{8} = \frac{12}{8} = \frac{3}{2}$$

$$L = P$$

④

$$\frac{1}{k-1} = -3 \quad | \cdot (k-1) \quad k \neq 1$$

$$1 = -3(k-1)$$

$$1 = -3k + 3$$

$$3k = 3 - 1$$

$$\boxed{k = \frac{2}{3}}$$

zk:

$$L = \frac{1}{\frac{2}{3} - 1} =$$

$$= \frac{1}{\frac{2-3}{3}} = \frac{1}{-\frac{1}{3}} = 1 \cdot \left(-\frac{3}{1}\right) = -3$$

$$P = -3$$

$$L = P$$

5

$$\frac{2k}{1} - \frac{1}{k+1} = \frac{2k-1}{1} \quad k \neq -1$$

$$2k \cdot (k+1) - 1 = 2k(k+1) - 1 \cdot (k+1)$$

$$\cancel{2k^2} + 2k - 1 = \cancel{2k^2} + 2k - k - 1$$

$$2k - 2k + k = -1 + 1$$

$$\boxed{k = 0}$$

2k:

$$L = 2 \cdot 0 - \frac{1}{0+1} =$$

$$= 0 - \frac{1}{1} = 0 - 1 = \boxed{-1}$$

$$P = 2 \cdot 0 - 1 = \boxed{-1}$$

$$L = P$$

6

$$\frac{1}{4x} + \frac{1}{6x} - \frac{3}{8x} = \frac{2}{1} \quad x \neq 0$$

$$6 + 4 - 9 = 48x$$

$$\frac{1}{x} = 48x$$

$$\boxed{x = \frac{1}{48}}$$

2k:

$$L = \frac{1}{12} + \frac{1}{8} - \frac{3}{6} =$$

$$= \frac{1}{12} + \frac{1}{8} - \frac{3}{6} =$$

$$= 1 \cdot \frac{12}{1} + 1 \cdot \frac{8}{1} - 3 \cdot \frac{6}{1} =$$

$$= 12 + 8 - 18 = \boxed{2}$$

$$P = \boxed{2}$$

$$L = P$$

7

$$\frac{k+2}{k-2} = \frac{k-1}{k+1} \quad k \neq 2, k \neq -1$$

$$(k+2) \cdot (k+1) = (k-1) \cdot (k-2)$$

$$\cancel{k^2} + k + 2k + 2 = \cancel{k^2} - 2k - k + 2$$

$$k + 2k + 2k + k = 2 - 2$$

$$6k = 0$$

$$k = 0 : 6$$

$$\boxed{k = 0}$$

2k:

$$L = \frac{0+2}{0-2} = \frac{2}{-2} = \boxed{-1}$$

$$P = \frac{0-1}{0+1} = \frac{-1}{1} = \boxed{-1}$$

$$L = P$$