Usuń niewymierność z mianownika

$$(1) \quad \frac{1}{\sqrt{2}}$$

(2)
$$\frac{1}{\sqrt{3}}$$

(3)
$$\frac{1}{\sqrt{7}}$$

(1)
$$\frac{1}{\sqrt{2}}$$
 (2) $\frac{1}{\sqrt{3}}$ (3) $\frac{1}{\sqrt{7}}$ (4) $\frac{1}{\sqrt{4}}$

$$(5) \quad \frac{\sqrt{2}}{\sqrt{3}}$$

$$(6) \quad \frac{\sqrt{2}+1}{\sqrt{5}}$$

(5)
$$\frac{\sqrt{2}}{\sqrt{3}}$$
 (6) $\frac{\sqrt{2}+1}{\sqrt{5}}$ (7) $\frac{\sqrt{2}+\sqrt{3}}{\sqrt{7}}$ (8) $\frac{\sqrt{7}-2}{\sqrt{2}}$

$$(8) \quad \frac{\sqrt{7}-2}{\sqrt{2}}$$

$$(9) \quad \frac{2 - \sqrt{11}}{\sqrt{3}}$$

$$(10) \quad \frac{3\sqrt{3}}{\sqrt{2}}$$

(9)
$$\frac{2-\sqrt{11}}{\sqrt{3}}$$
 (10) $\frac{3\sqrt{3}}{\sqrt{2}}$ (11) $\frac{3\sqrt{7}-2\sqrt{2}}{3\sqrt{2}}$ (12) $\frac{-\sqrt{7}-1}{-\sqrt{2}}$

$$(12) \ \frac{-\sqrt{7}-1}{-\sqrt{2}}$$

(13)
$$\frac{1}{\sqrt{2}+1}$$

(14)
$$\frac{1}{\sqrt{2}-1}$$

(15)
$$\frac{\sqrt{2}}{\sqrt{5}-1}$$

(13)
$$\frac{1}{\sqrt{2}+1}$$
 (14) $\frac{1}{\sqrt{2}-1}$ (15) $\frac{\sqrt{2}}{\sqrt{5}-1}$ (16) $\frac{3\sqrt{2}}{\sqrt{7}+3}$

$$(17) \quad \frac{2\sqrt{3} - 4}{1 - \sqrt{2}}$$

$$(18) \quad \frac{\frac{1}{2} + \sqrt{2}}{\sqrt{2} - 2}$$

(19)
$$\frac{\sqrt{2} - \sqrt{3}}{\sqrt{5} - \sqrt{7}}$$

(17)
$$\frac{2\sqrt{3}-4}{1-\sqrt{2}}$$
 (18) $\frac{\frac{1}{2}+\sqrt{2}}{\sqrt{2}-2}$ (19) $\frac{\sqrt{2}-\sqrt{3}}{\sqrt{5}-\sqrt{7}}$ (20) $\frac{\sqrt{3}-3\sqrt{2}}{\sqrt{7}+2\sqrt{3}}$

Oblicz

$$(21) \quad \left(\frac{3+\sqrt{2}}{2}\right)^2$$

$$(22) \left(\frac{1+\sqrt{3}}{\sqrt{2}}\right)^2$$

(23)
$$3 \cdot \sqrt[3]{27} + 3$$

(24)
$$\frac{1}{8} \left(4 - \frac{\sqrt{2}}{3} \right)^2$$

(25)
$$-\left[\sqrt{2} - \sqrt{3} \cdot (\sqrt{6} - 1)\right]$$
 (26) $(\sqrt{2} + \sqrt{3})(\sqrt{2} - \sqrt{3})$

(26)
$$(\sqrt{2} + \sqrt{3})(\sqrt{2} - \sqrt{3})$$

$$(27) \ \left(3 \cdot 3^{\frac{1}{2}} + 3^{\frac{1}{3}}\right) \cdot \sqrt{3}$$

(28)
$$\sqrt[7]{3} \cdot 3^{\frac{1}{7}} \cdot \left(\sqrt{3} \cdot \sqrt{2} - \sqrt{6}\right)$$

$$(29) \ \ 3^7 \cdot 3^{-7} \cdot 3^3$$

$$(30) \ 2^5 \cdot 2^{-4} - 4^7 : 4^6$$

$$(31) \ \ 2^7 \cdot 4^{-3} + 3^{14} : \left(\frac{1}{3}\right)^{-15}$$

$$(32) \ 1 - \frac{1}{3^2} + 3 \cdot \sqrt{3} \cdot 3^{\frac{1}{2}}$$

$$(33) \ \frac{-2+16^{-\frac{1}{2}}}{\sqrt{2}}$$

$$(34) \quad \frac{3^{13}}{9^5} \cdot 9$$

$$(35) \ \frac{2 \cdot 2^7 : \left(\frac{1}{4}\right)^{-2}}{2^7}$$

$$(36) \quad \frac{\sqrt[3]{9} \cdot 3^{-2} \cdot \sqrt[4]{3}}{3}$$

Narysuj wykres funkcji

$$(37) \ y = x$$

(38)
$$y = 2x$$

(38)
$$y = 2x$$
 (39) $y = 3x$

(40)
$$y = \frac{1}{2}x$$
 (41) $y = \frac{1}{3}x$ (42) $y = x + 1$

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$$y = \frac{1}{3}x$$

$$(42) \quad y = x + 1$$

$$(43) y = x + 2$$

$$(44) \quad y = x - 2$$

(43)
$$y = x + 2$$
 (44) $y = x - 2$ (45) $y = 2x - 1$

$$(46) \ \ y = 3x - 2$$

$$(47) f(x) = 2 - x$$

(46)
$$y = 3x - 2$$
 (47) $f(x) = 2 - x$ (48) $f(x) = \frac{1}{2}x - 2$

(49)
$$y = 2x - 4$$
 (50) $y = -x$ (51) $y = -2x$

(50)
$$y = -x$$

(51)
$$y = -2x$$

(52)
$$y = -3x - 2$$

(52)
$$y = -3x - 2$$
 (53) $y = -\frac{1}{2}x - 4$ (54) $y = 2$

$$(54) \ y = 2$$

(55)
$$q(t) = 3t + 1$$

$$(56) \quad x \mapsto x - 2$$

(55)
$$g(t) = 3t + 1$$
 (56) $x \mapsto x - 2$ (57) $t \mapsto -2 - 2t$

(58)
$$f(x) = 0$$

(59)
$$2y = 4x - 2$$

(58)
$$f(x) = 0$$
 (59) $2y = 4x - 2$ (60) $y = x \cdot \sqrt{2} - 1$

Rozwiąż równanie

(61)
$$-3x = 4 - 2 \cdot (3x + 2)$$

(61)
$$-3x = 4 - 2 \cdot (3x + 2)$$
 (62) $x^2 - 2x = 4 + (x + 1)^2$

(63)
$$x - (1 - 2x) = 3$$

(64)
$$x - (2x+1)^2 = -x - 4x^2 + 3$$

(65)
$$4x + 1 = 3x - \sqrt{2}$$

(66)
$$1 - 3x = 3\sqrt{2} \cdot x - 3$$

(67)
$$2 - \frac{1}{2}(x+7) = \frac{3-x}{2}$$

(68)
$$\frac{2-x}{3} + \frac{x-4}{2} = 1$$

(69)
$$(x+4)(x+3) = x^2 - 7$$

(70)
$$\frac{4x-2}{2} - \frac{3x-3}{3} = 4 - x$$

$$(71) \ \frac{2x+7}{3} = \frac{4x-1}{5}$$

$$(72) \quad \frac{7-3t}{2} - t + 4 = 3t - 1$$

(73)
$$x(x-3) - x^2 = 0$$

(74)
$$(x+4)(3-x) = -x^2 - (2x+1)$$

(75)
$$\frac{\sqrt{3}}{3} \cdot x(x-3) = \frac{x(6x-1)}{6\sqrt{3}}$$
 (76) $\frac{x}{\sqrt[3]{2}} \cdot 2^{\frac{4}{3}} = \frac{4^3}{2^{2\frac{1}{2}}} - 2x$

$$(76) \ \frac{x}{\sqrt[3]{2}} \cdot 2^{\frac{4}{3}} = \frac{4^3}{2^{2\frac{1}{2}}} - 23$$

Zaznacz na osi liczbowej

(77)
$$x \in (1,3)$$
 (78) $x \in (1,3)$ (79) $x \in \langle 1,3 \rangle$

$$(78) x \in (1,3)$$

$$(79)$$
 $x \in \langle 1, 3 \rangle$

$$(80) \quad x \in (-\infty, 1)$$

(81)
$$x \in (-\infty, \frac{3}{2})$$

(80)
$$x \in (-\infty, 1)$$
 (81) $x \in (-\infty, \frac{3}{2})$ (82) $x \in (1, 3) \cup (5, 10)$

(83)
$$x \in (-1, 1) \cup (2, \infty)$$
 (84) $x \in (-\infty, -1) \cup (1, \infty)$

(84)
$$x \in (-\infty, -1) \cup \langle 1, \infty \rangle$$

$$(85) x \in (-\infty, 1) \cup (1, \infty)$$

$$(86) x \in \langle 1, 5 \rangle \cap \langle 2, 10 \rangle$$

(86)
$$x \in \langle 1, 5 \rangle \cap \langle 2, 10 \rangle$$

(87)
$$x \in (-7,1) \cap (-1,3)$$
 (88) $x \in (-\infty,5) \cup (2,7)$

$$(88) \quad x \in (-\infty, 5) \cup (2, 7)$$

$$(89) \quad x \in (-3, 1) \cup (1, \infty)$$

$$(89) \quad x \in (-3, 1) \cup (1, \infty) \qquad (90) \quad x \in (-\infty, 3) \cap (1, \infty)$$

$$(91) x \in (-7,1) \cap (5,\infty)$$

$$(92) x \in (0,4) \cup \{6\}$$

$$(93) \ x \in (-1,1) \cap \{0\}$$

(93)
$$x \in (-1,1) \cap \{0\}$$
 (94) $x \in (-7,7) \setminus \langle 0, 10 \rangle$

Rozwiąż nierówność

(95)
$$2x - 6 \le x$$

$$(96) \ \ x - \frac{1}{2} \le \frac{3}{4} - x$$

$$(97) -3x - (3-x) \ge -x + 3$$

$$(97) -3x - (3-x) \ge -x + 3 \qquad (98) 3x - \frac{x-2}{2} \le x$$

$$(99) \quad \frac{x+3}{3} + \frac{x+2}{2} < 0$$

$$(100) \ \frac{2x-3}{4} > \frac{x+2}{2}$$

$$(101) \ \frac{2x-3}{4} \ge -\frac{-x-2}{2}$$