

$$5^x - 2^y = 1 \quad (12)$$

$$5^{x-1} \cdot 2^{y-1} = 2$$

$$4^{x+1} + y = 7 \quad (15)$$

$$4^{x+2} - 3y = -7$$

$$12^{2y-x} = \left(\frac{1}{2\sqrt{3}}\right)^{4-2y} \quad (18)$$

$$2^x \cdot 3^y = 24$$

$$2^{-y} - 2^{-x} = \frac{1}{4} \quad (21)$$

$$2^{x-y} - 2^{y-x} = 1\frac{1}{2}$$

$$2^x \cdot 3^y = 72 \cdot 6^{y-x} \quad (24)$$

$$3^x \cdot 2^y = 3 \cdot 6^{x-y}$$

$$5^x - 2 \cdot 7^y = 11 \quad (11)$$

$$2 \cdot 5^x - 7 \cdot 7^y = 1$$

$$2^x + 4^y = 10 \quad (14)$$

$$4^x + 16^y = 68$$

$$3^{x+y} - 2^{x-y} = 1 \quad (17)$$

$$3^{x+y+1} - 2^{x-y+2} = -5$$

$$(2\sqrt{5})^{x-y} = 20 \quad (20)$$

$$(2\sqrt{3})^{x+y} = 24$$

$$9^x + 25^y = 10 \quad (23)$$

$$(3^x - 1)^2 + (5^y + 1)^2 = 8$$

$$(\sqrt{2^x})^y = 4\sqrt{2} \quad (10)$$

$$3^{x-3} \left(\frac{1}{3}\right)^{y-1} = 9$$

$$3^x + 5^y = 14 \quad (13)$$

$$9^x - 3 \cdot 25^y = 6$$

$$3^x + 3^y = 0 \quad (16)$$

$$9^x + 10^y = -1$$

$$5^{2x} \cdot 3^y = 675 \quad (19)$$

$$4\sqrt{0.5^y} = (\sqrt{2})^x$$

$$5^{(3^{2x-y})} = \frac{1}{25} \quad (22)$$

$$3^x + y = 14$$

תשובות: (2, 1), (1, 2), (5, 2), (0, 4), (1, 2), (3, 1), (1, 1), (2, 3), (1, 1), (1), (3, 1), (1), (3, 1), (6, 3), (1), (10, 5), (2, 2/3), (9, -4), (-2), (2, 4), (8, -1), (-6), (3, 2), (7, -1), (-1), (-5), (3, 1/2), (1, 1 1/2), (14, 2), (1, 13), (1, 2), (12, 2), (1, 11), (-1, -5), (15, 1/2), (5, -1/2), (17, -1), (-1/9), (1, -1), (16, -1/2), (5, 1/2), (19, 3), (18, 3), (1, 18), (2, 1/2), (-1/2), (17, -1), (-1/9), (1, -1), (16, -1/2), (5, 1/2), (20, 2), (1, 24), (1, 0), (23, 1), (1, 11), (22, 2), (1, 21), (2, 1/2), (1/2), (20, 2)

פתור את מערכות המשוואות הבאות (שים לב שהבסיס חייב להיות חיובי):

$$x^y = 8 \quad (27)$$

$$\sqrt[4]{216} = 3x$$

$$10^y = x \quad (26)$$

$$(\sqrt{x})^{y+7} = 10^{1+y}$$

$$\sqrt[4]{y} = \sqrt{3} \quad (25)$$

$$y^x = 9$$

$$x^{x+y} = y^{12} \quad (29)$$

$$y^{x+y} = x^3$$

$$(0 < 3y - x) \quad x^{3y-x} = y^5 \quad (28)$$

$$y^{3y-x} = (\sqrt{x})^{40}$$

$$y^{x^2+x} = 64 \quad (31)$$

$$y^{x^2} = 32$$

$$\sqrt{2^{x+y}} = 2\sqrt{2} \quad (30)$$

$$\sqrt{x} y^{2+7} = x(x^2)$$

$$x^y = 3x \quad (34)$$

$$9x^{3y-5} = x^3$$

$$\sqrt{x} y = \sqrt{y} x \quad (33)$$

$$x^3 = y^2$$

$$\frac{x}{\sqrt[5]{5x+3y}} = 3 \quad (32)$$

$$\frac{x}{2^y} (5x+3y) = 216$$

תשובות: (2, 3), (27, 0.0001), (-4), (10, 1), (26, -2), (1/3), (2, 3), (25, 2), (3), (28, 1), (1), (29, 4), (2), (1, 1), (30, 1), (2), (1, 2), (31, 5), (2, 5/2), (32, 3), (2, 34, 9/4), (27/8), (1, 1), (33, 4), (1/2), (1, 1/2), (32, 3)

$$(\sqrt{2+\sqrt{3}})^x + (\sqrt{2-\sqrt{3}})^x = 4 \quad (108)$$

$$2 \left(\frac{4^x+1}{2^x}\right)^2 - 7 \left(\frac{4^{-x}+1}{2^{-x}}\right) + 5 = 0 \quad (107)$$

$$(3+2\sqrt{2})^x - \sqrt{2}(\sqrt{2}+1)^x + \sqrt{2} = 1 \quad (109)$$

תשובות: (88, 1/4), (87, -1), (86, 1/2), (85, -1/2), (84, 2/2), (83, 1), (89, 2), (96, -1), (95, 3), (94, 2), (93, 1), (92, 1/2), (91, 6), (90, -1), (89, 2), (103, -3), (102, 2), (101, 1/2), (100, -1/2), (99, 1), (98, 0), (97, 1/2), (104, 4), (105, אין פתרון), (106, 1), (107, -2), (108, 1/2), (109, 0)

פתור את המשוואות הבאות שבהן המשתנה מופיע גם בבסיס (שים לב שהבסיס חייב להיות חיובי):

$$(x+1)^{2x-1} = (x+1)^{4x} \quad (111)$$

$$(x+4)^{x^2-2x} = (x+4)^3 \quad (113)$$

$$(x-2)^{\sqrt{x}} = (\sqrt{x-2})^x \quad (115)$$

$$(x^2+x-1)^{x^2+1} = 1 \quad (117)$$

$$(2x^2-x)^{x^2-3x} = (2x^2-x)^{x+5} \quad (119)$$

$$\left(\frac{x}{3x-1}\right)^{x^2-2x} = \left(\frac{3x-1}{x}\right)^{-3x} \quad (121)$$

$$|x-3|^{x^2-2} = |x-3|^{|x-2|} \quad (123)$$

$$x^{2x+1} = x^5 \quad (110)$$

$$(x+3)^{x^2} = (x+3)^9 \quad (112)$$

$$(5-x)^x = (5-x)^{\frac{3}{4-x}} \quad (114)$$

$$(\sqrt{3-x})^{\sqrt{x}} = (\sqrt[3]{3-x})^{x+\frac{1}{2}} \quad (116)$$

$$(x^2-5x+7)^{x^2-1} = 1 \quad (118)$$

$$\left(\frac{x-1}{2x}\right)^{2x^2-5x} = \left(\frac{x-1}{2x}\right)^{-2} \quad (120)$$

$$\left(\frac{x+1}{x}\right)^{x^2+x} = 1 \quad (122)$$

תשובות: (114, 3), (113, -1), (112, -2), (111, 0), (110, 1), (109, -1), (108, 3), (107, 1/2), (106, 1), (105, 3), (104, 1), (103, 2), (102, 1), (101, 1/4), (100, 1), (99, 2), (98, 1), (97, 1/2), (96, 5), (95, 1), (94, 2), (93, 3), (92, 1/2), (91, 5), (90, 1), (89, 2), (88, 1/2), (87, 3), (86, 1/2), (85, 5), (84, 1), (83, 2), (82, 1/2), (81, 5), (80, 1), (79, 2), (78, 1/2), (77, 5), (76, 1), (75, 2), (74, 1/2), (73, 5), (72, 1), (71, 2), (70, 1/2), (69, 5), (68, 1), (67, 2), (66, 1/2), (65, 5), (64, 1), (63, 2), (62, 1/2), (61, 5), (60, 1), (59, 2), (58, 1/2), (57, 5), (56, 1), (55, 2), (54, 1/2), (53, 5), (52, 1), (51, 2), (50, 1/2), (49, 5), (48, 1), (47, 2), (46, 1/2), (45, 5), (44, 1), (43, 2), (42, 1/2), (41, 5), (40, 1), (39, 2), (38, 1/2), (37, 5), (36, 1), (35, 2), (34, 1/2), (33, 5), (32, 1), (31, 2), (30, 1/2), (29, 5), (28, 1), (27, 2), (26, 1/2), (25, 5), (24, 1), (23, 2), (22, 1/2), (21, 5), (20, 1), (19, 2), (18, 1/2), (17, 5), (16, 1), (15, 2), (14, 1/2), (13, 5), (12, 1), (11, 2), (10, 1/2), (9, 5), (8, 1), (7, 2), (6, 1/2), (5, 5), (4, 1), (3, 2), (2, 1/2), (1, 5)

משוואות מעריכיות עם שני נעלמים

פתור את מערכות המשוואות הבאות:

$$x+y=3 \quad (3)$$

$$3^{x+1} + 3^y = 18$$

$$2^{x+y} = 16 \quad (6)$$

$$3^{x-y} = 9$$

$$(5\sqrt{5})^{x+y-4} = 25^{1-x} \quad (9)$$

$$9\left(\frac{1}{\sqrt{3}}\right)^{y-x} = 3^{x+y}$$

$$x+y=2 \quad (2)$$

$$7^{x+1} + 7^{1-y} = 50$$

$$x+y=3 \quad (5)$$

$$2^x + 2^y = 6$$

$$(\sqrt{3})^{y-x} = 3 \quad (8)$$

$$2^{x^2+y^2} = 4^{10}$$

$$x-y=2 \quad (1)$$

$$2^x + 2^y = 10$$

$$x+y=2 \quad (4)$$

$$5^x - 5^y = 24$$

$$4^{xy} = 64^2 \quad (7)$$

$$5^{2x-y} = 625$$