

$$\begin{array}{rcl}
 1) & 2x - 3y & = -15 \\
 & 5x + y & = 22 \\
 \hline
 & 2x - 3y & = -15 \\
 & 15x + 3y & = 66 \\
 \hline
 & 17x & = 51 \\
 & x & = 3 \\
 & y & = 7
 \end{array}$$

$$\begin{array}{rcl}
 2) & 21x + 4y & = -22 \\
 & 2x - 3y & = -19 \\
 \hline
 & 63x + 12y & = -66 \\
 & 4x - 12y & = -76 \\
 \hline
 & 71x & = -142 \\
 & x & = -2 \\
 & y & = 5
 \end{array}$$

$$\begin{array}{rcl}
 3) & 7^{3x+y} & = 343 = 7^3 \\
 & 5^{2x+y} & = 25 = 5^2
 \end{array}$$

$$\begin{array}{rcl}
 4) & 16^{x+2y} & = 32 = 16^{1.25} \\
 & 36^{3x+2y} & = 216 = 36^{1.5}
 \end{array}$$

$$\begin{array}{rcl}
 & 3x + y & = 3 \\
 & 2x + 3y & = 2 \\
 \hline
 & -9x - 3y & = -9 \\
 & 2x + 3y & = 2 \\
 \hline
 & -7x & = -7 \\
 & x & = 1 \\
 & y & = 0
 \end{array}$$

$$\begin{array}{rcl}
 & -x + 2y & = 1.25 \\
 & 3x + 2y & = 1.5 \\
 \hline
 & -4x + 0y & = 5 \\
 & -12x - 2y & = -6 \\
 \hline
 & -16x & = -1 \\
 & x & = \frac{1}{16} \\
 & y & = \frac{21}{32}
 \end{array}$$

$$\begin{array}{rcl}
 5) & \frac{1}{x} + \frac{1}{y} & = 19 \\
 & -\frac{1}{x} + \frac{1}{y} & = -7 \\
 \hline
 & \frac{2}{y} & = 12 \\
 & 2 & = 12y \\
 & 12y & = 2 \\
 & y & = \frac{1}{6} \\
 & x & = \frac{1}{5}
 \end{array}$$

$$\begin{array}{rcl}
 6) & \frac{5}{x} + \frac{9}{y} & = 15 \\
 & \frac{11}{x} - \frac{2}{y} & = 21 \\
 \hline
 & \frac{5}{x} + \frac{9}{y} & = 15 \\
 & \frac{55}{x} - \frac{2}{y} & = 63 \\
 \hline
 & \frac{39}{x} & = 78 \\
 & 39 & = 78x \\
 & 78x & = 39 \\
 & x & = \frac{19}{39} \\
 & y & = \frac{19}{10} = 1 \frac{9}{10}
 \end{array}$$

$$\begin{array}{r}
 7) \quad 3x + 2y = a \\
 \quad -x + y = b \\
 \hline
 3x + 2y = a \\
 -3x + 3y = 3b \\
 \hline
 5y = a + 3b \\
 y = \frac{a + 3b}{5}
 \end{array}$$

$$\begin{array}{r}
 3x + 2y = a \\
 -x + y = b \\
 \hline
 3x + 2y = a \\
 2x - 2y = -2b \\
 \hline
 5x = a - 2b \\
 x = \frac{a - 2b}{5}
 \end{array}$$

$$\begin{array}{l}
 8) \quad 8^{x+y} = 256 = 8^{2\frac{2}{3}} \\
 9) \quad 8^{x-2y} = 243 = 81^{1\frac{1}{3}}
 \end{array}$$

$$\begin{array}{l}
 9) \quad 11^{3x-2y} = \frac{1}{121} = 11^{-2} \\
 \quad 5^{4x+y} = \frac{1}{125} = 5^{-3}
 \end{array}$$

$$\begin{array}{r}
 2x + 7y = 2\frac{2}{3} \\
 x - 2y = 1\frac{1}{4} \\
 \hline
 2x + 7y = 2\frac{2}{3} \\
 -2x + 4y = -2\frac{1}{2} \\
 \hline
 11y = \frac{1}{6} \\
 y = \frac{1}{66} \\
 x = \frac{133}{132} = 1\frac{57}{132}
 \end{array}$$

$$\begin{array}{r}
 3x - 2y = -2 \\
 4x + 6y = -3 \\
 \hline
 9x - 6y = -6 \\
 4x + 6y = -3 \\
 \hline
 13x = -9 \\
 x = -\frac{9}{13} \\
 y = -\frac{1}{26}
 \end{array}$$

$$\begin{array}{r}
 10) \quad \begin{array}{r} 7 \\ 5x-2 \end{array} - \begin{array}{r} 2 \\ y+3 \end{array} = \begin{array}{r} 9 \\ 65 \end{array} \\
 \hline
 \begin{array}{r} 3 \\ 5x-2 \end{array} + \begin{array}{r} 7 \\ y+3 \end{array} = \begin{array}{r} 41 \\ 65 \end{array} \\
 \hline
 \begin{array}{r} 24.5 \\ 5x-2 \end{array} - \begin{array}{r} 7 \\ y+3 \end{array} = \begin{array}{r} 31.5 \\ 65 \end{array} \\
 \hline
 \begin{array}{r} 3 \\ 5x-2 \end{array} + \begin{array}{r} 7 \\ y+3 \end{array} = \begin{array}{r} 41 \\ 65 \end{array} \\
 \hline
 \begin{array}{r} 55 \\ 10x-4 \end{array} = \begin{array}{r} 55 \\ 26 \end{array}
 \end{array}$$

$$10x - 4 = 26$$

$$10x = 30$$

$$x = 3$$

$$y = 2$$

$$\begin{array}{r}
 11) \quad 4^{4x-2y} = 1 = 4^0 \\
 \quad (\sqrt{3})^{2x+10} = (\sqrt{5})^{y+3} \\
 \hline
 4x - 2y = 0 \\
 2x + 10 = 2y + 3 \\
 -4x + 2y = 0 \\
 \hline
 2x - 2y = -7 \\
 -2x = -7 \\
 x = 3.5 \\
 y = -7
 \end{array}$$

$$12) \quad 7(3^{x+2y}) = \sqrt{1323}$$

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

$$\sqrt{3}^{2x+4y} = \sqrt{3}^3$$

$$2x+4y = 3$$

$$8(7^{2y-x}) = \frac{4}{7}$$

$$7^{2y-x} = \frac{1}{7}$$

$$7^{2y-x} = 7^{-1}$$

$$2y-x = -1$$

$$2x+4y = 3$$

$$\underline{-x+2y = -1}$$

$$2x+4y = 3$$

$$\underline{-2x+4y = -2}$$

$$8y = 1$$

$$y = \frac{1}{8}$$

$$x = \frac{5}{4} = 1\frac{1}{4}$$