27.4 1)

α) $3^{x+1}=81\Rightarrow 3^{x+1}=3^4\Rightarrow x+1=4\Rightarrow x=3$

β) $\frac{1}{5^x}=125\Rightarrow 5^{-x}=5^3\Rightarrow -x=3\Rightarrow x=-3$

γ) $e^{-x+1}=\frac{1}{\sqrt{e^x}}\Rightarrow e^{-x+1}=e^{\frac{-x}{2}}\Rightarrow -x+1=-\frac{x}{2}\Rightarrow -2x+2=-\cancel{2}\frac{x}{\cancel{2}}\Rightarrow -2x+2=-x\Rightarrow x=2$

δ) $\left(\frac{3}{5}\right)^{2x+1}=\frac{5}{3}\Rightarrow\left(\frac{3}{5}\right)^{2x+1}=\left(\frac{3}{5}\right)^{-1}\Rightarrow 2x+1=-1\Rightarrow 2x=-2\Rightarrow x=-1$

27.4 2)

$2^x=32\Rightarrow 2^x=2^5\Rightarrow x=5$

27.4 3)

$2^{x-4}=16\Rightarrow 2^{x-4}=2^4\Rightarrow x-4=4\Rightarrow x=8$

27.4 4)

$3^{x-2}=27\Rightarrow 3^{x-2}=3^3\Rightarrow x-2=3\Rightarrow x=5$

27.4 5)

$3^{5x-8}=9\Rightarrow 3^{5x-8}=3^2\Rightarrow 5x-8=2\Rightarrow 5x=10\Rightarrow x=2$

27.4 6)

$5^{x-9}=25\Rightarrow 5^{x-y}=5^2\Rightarrow x-9=2\Rightarrow x=11$

27.4 7)

$5^{3-x}=625\Rightarrow 5^{3-x}=5^4\Rightarrow 3-x=4\Rightarrow x=-1$

27.4 8)

$4^{2x-1}=64\Rightarrow 4^{2x-1}=4^3\Rightarrow 2x-1=3\Rightarrow 2x=4\Rightarrow x=2$

27.4 9)

$6^x=\frac{1}{36}\Rightarrow 6^x=6^{-2}\Rightarrow x=-2$

27.4 10)

$4^x=\frac{1}{16}\Rightarrow 4^x=4^{-2}\Rightarrow x=-2$

27.4 11)

$9^x=\frac{1}{3}\Rightarrow 3^{2x}=3^{-1}\Rightarrow 2x=-1\Rightarrow x=-\frac{1}{2}$

27.4 12)

$9^{x-1}=\frac{1}{3}\Rightarrow 3^{2(x-1)}=3^{-1}\Rightarrow 2x-2=-1\Rightarrow 2x=1\Rightarrow x=\frac{1}{2}$

27.4 13)

$\frac{1}{3^{x+1}}=27\Rightarrow 3^{-(x+1)}=3^3\Rightarrow -x-1=3\Rightarrow x=-4$

27.4 14)

$e^{x+1}=\frac{1}{e^{3+x}}\Rightarrow e^{x+1}=e^{3(3+x)}\Rightarrow x+1=-3-x\Rightarrow 2x=-4\Rightarrow x=-2$

27.4 15)

$$e^x = \frac{1}{e^x} \Rightarrow e^x = e^{-x} \Rightarrow x = -x \Rightarrow x = 0$$

27.4 16)

$$e^x = \frac{1}{e^{1-x}} \Rightarrow e^x = e^{-(1-x)} \Rightarrow x = -1 + x \text{ αδύνατη}$$

27.4 17)

$$7^{x+1} = 1 \Rightarrow 7^{x+1} = 7^0 \Rightarrow x + 1 = 0 \Rightarrow x = -1$$

27.4 18)

$$e^{2x^2+x-1} = 1 \Rightarrow e^{2x^2+x-1} = e^0 \Rightarrow 2x^2 + x - 1 = 0$$

$$\Delta = 9 \quad , \quad x_{1,2} = \frac{-1 \pm 3}{4} \begin{cases} \nearrow x_1 = -1 \\ \searrow x_2 = \frac{1}{2} \end{cases}$$

27.4 19)

$$e^{x^2-5x+6} = 1 \Rightarrow e^{x^2-5x+6} = e^0 \Rightarrow x^2 - 5x + 6 = 0$$

$$\Delta = 1 \quad , \quad x_{1,2} = \frac{5 \pm 1}{2} \begin{cases} \nearrow x_1 = 3 \\ \searrow x_2 = 2 \end{cases}$$

27.4 20)

$$5^{x^2-3x+2} = 1 \Rightarrow 5^{x^2-3x+2} = 5^0 \Rightarrow x^2 - 3x + 2 = 0$$

$$\Delta = 1 \quad , \quad x_{1,2} = \frac{3 \pm 1}{2} \begin{cases} \nearrow x_1 = 1 \\ \searrow x_2 = 2 \end{cases}$$

27.4 21)

$$\left(\frac{1}{3}\right)^x = \frac{1}{81} \Rightarrow 3^{-x} = 3^{-4} \Rightarrow -x = -4 \Rightarrow x = 4$$

27.4 22)

$$\left(\frac{1}{4}\right)^{x+1} = \frac{1}{256} \Rightarrow 4^{-x-1} = 4^{-4} \Rightarrow -x - 1 = -4 \Rightarrow x = 3$$

27.4 23)

$$\left(\frac{1}{2}\right)^{2x} = \frac{1}{4} \Rightarrow 2^{-2x} = 2^{-2} \Rightarrow -2x = -2 \Rightarrow x = 1$$

27.4 24)

$$\left(\frac{2}{7}\right)^{3-x} = \frac{7}{2} \Rightarrow \left(\frac{2}{7}\right)^{3-x} = \left(\frac{2}{7}\right)^{-1} \Rightarrow 3 - x = -1 \Rightarrow x = 4$$

27.4 25)

$$\left(\frac{4}{3}\right)^{x-1} = \left(\frac{9}{16}\right)^x \Rightarrow \left(\frac{4}{3}\right)^{x-1} = \left(\frac{4}{3}\right)^{-2x} \Rightarrow x - 1 = -2x \Rightarrow 3x = 1 \Rightarrow x = \frac{1}{3}$$

27.4 26)

$$\left(\frac{2}{5}\right)^{x+4}=\left(\frac{25}{4}\right)^{x+1}\Rightarrow\left(\frac{2}{5}\right)^{x+4}=\left(\frac{2}{5}\right)^{-2(x+1)}\Rightarrow x+4=-2x-2\Rightarrow 3x=-6\Rightarrow x=-2$$