4.2.1

f) $(\frac{1}{4})^{6-x} = 4$

$(4^{-1})^{6-x} = 4$

$4^{-6+x} = 4^1$

$-6+x = 1$

$x = 7$

$S = \{7\}$

00

d) $9^{(x^2)} = 3^{3x+2}$

$(3^2)^{x^2} = 3^{3x+2} \iff 3^{2x^2} = 3^{3x+2}$

$\iff 2x^2 = 3x+2$

$\iff 2x^2 - 3x - 2 = 0$

$\Delta = (-3)^2 - 4 \cdot 2 \cdot (-2) = 9 + 16 = 25$

$\Rightarrow x_{1,2} = \frac{3 \pm 5}{4} = \begin{cases} 2 \\ -\frac{1}{2} \end{cases}$

$\Rightarrow S = \{-\frac{1}{2}; 2\}$

e) $2^{-100x} = 0{,}5^{x-4}$

$0{,}5 = \frac{1}{2} = 2^{-1}$

$$2^{-100x} = 2^{-x+4}$$

$$-100x = -x+4$$

$$-99x = 4$$

$$x = -\frac{4}{99} \Rightarrow S = \left\{-\frac{4}{99}\right\}$$

h) $2^x \cdot 4^x = -5$ $\Rightarrow$ $S = \emptyset$

car $-5 < 0$

et $2 > 0$

ou $8 > 0$

$(2 \cdot 4)^x = -5$

$8^x = -5$

$2^{3x} = -5$

$S = \emptyset$

i) $(5^{x-2})^4 = 125 \cdot 5^{5x-3}$

$5^{4x-8} = 5^3 \cdot 5^{5x-3}$

$5^{4x-8} = 5^{5x}$

$4x - 8 = 5x$

$-8 = x$ $\Rightarrow$ $S = \{-8\}$