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$$\frac{8^{2-x}}{2^{2+x}} = \frac{16^{2x-1}}{4^x}$$

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

$$\frac{2^{6-3x}}{2^{2+x}} = \frac{2^{8x-4}}{2^{2x}}$$

$$2^{6-3x-(2+x)} = 2^{8x-4-2x}$$

$$6-3x-2-x = 8x-4-2x$$

$$-10x = -8 \qquad \boxed{x = \frac{4}{5}}$$

172 $3^{2-x} + 3^{3-x} = 12$

$$3^2 \cdot 3^{-x} + 3^3 \cdot 3^{-x} = 12$$

$$3^{-x}(3^2 + 3^3) = 12$$

$$3^{-x}(9+27) = 12$$

$$3^{-x} \cdot 36 = 12$$

$$3 \cdot 3^{-x} = 1$$

$$3^{-x} = \frac{1}{3}$$

$$\left(\frac{1}{3}\right)^x = \frac{1}{3} \rightarrow \boxed{x=1}$$

oppure

$$3^{1-x} = 1$$

$$3^{1-x} = 3^0$$

$\hookrightarrow 1-x = 0 \rightarrow \boxed{x=1}$

190 $9^x - 3 = 2 \cdot 3^x$

$3^{2x} - 2 \cdot 3^x - 3 = 0$

$(3^x)^2 - 2 \cdot 3^x - 3 = 0$ $\quad 3^x = t$

$t^2 - 2t - 3 = 0$

$(t-3)(t+1) = 0$ $\begin{cases} t = 3 \quad 3^x = 3 \quad x = 1 \\ t = -1 \quad 3^x = -1 \quad \text{imp.} \end{cases}$

207 $\dfrac{4}{2^x - 1} + \dfrac{3}{2^x + 1} = 5$ $\quad 2^x = t$

C.E.

$t - 1 \neq 0 \Rightarrow t \neq 1$

$2^x \neq 1 \rightarrow x \neq 0$

$t + 1 \neq 0 \Rightarrow t \neq -1$

$2^x \neq -1 \quad \forall x$

$\dfrac{4}{t-1} + \dfrac{3}{t+1} = 5$

$\dfrac{4(t+1) + 3(t-1)}{(t-1)(t+1)} = \dfrac{5(t^2-1)}{(t-1)(t+1)}$

$4t + 4 + 3t - 3 - 5t^2 + 5 = 0$

$-5t^2 + 7t + 6 = 0$

$5t^2 - 7t - 6 = 0$ $\quad$ Suma $= -7$ $\quad -10 + 3$

Producto $= -30$

$5t^2 - 10t + 3t - 6 = 0$

$5t(t-2) + 3(t-2) = 0$

$(t-2)(5t+3) = 0$ $\begin{cases} t - 2 = 0 \Rightarrow t = 2 \rightarrow 2^x = 2 \rightarrow x = 1 \\ 5t + 3 = 0 \Rightarrow t = -\frac{3}{5} \text{ N.A.} \end{cases}$

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$$4^{\sqrt{x+2}} + 6 = 4^{2-\sqrt{x+2}}$$

C.E. $x+2 \geq 0$

$\boxed{x \geq -2}$

$$4^2 \cdot 4^{-\sqrt{x+2}} \qquad 4^{\sqrt{x+2}} = t$$

$$t + 6 = \frac{4^2}{t}$$

$$\frac{t^2 + 6t}{t} = \frac{16}{t}$$

$$t^2 + 6t - 16 = 0$$

$$(t+8)(t-2) = 0$$

$t = -8$ N.A.

$t = 2$

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

$$2^{2\sqrt{x+2}} = 2^1$$

$$2\sqrt{x+2} = 1$$

↓ elevo al ^{2}

$$4(x+2) = 1$$

$$x + 2 = \frac{1}{4} \qquad x = \frac{1}{4} - 2 = -\frac{7}{4}$$