Solve

$$3\cdot 4^{\sqrt{x}-1} - 2\cdot 6^{\sqrt{x}-1} - 9^{\sqrt{x}-1} > 0$$

Let $y = \sqrt{x} - 1$

So

$$3\cdot 4^y - 2\cdot 6^y - 9^y > 0$$

Divide through by 9^y:

$$\frac{3\cdot 4^y}{9^y} - \frac{2\cdot 6^y}{9^y} - 1 > 0$$

$$\Rightarrow \quad 3\cdot\left(\frac{2}{3}\right)^{2y} - 2\cdot\left(\frac{2}{3}\right)^y - 1 > 0$$

Let $w = \left(\frac{2}{3}\right)^y$

$$\Rightarrow \quad 3\cdot w^2 - 2\cdot w - 1 > 0$$

This is a quadratic

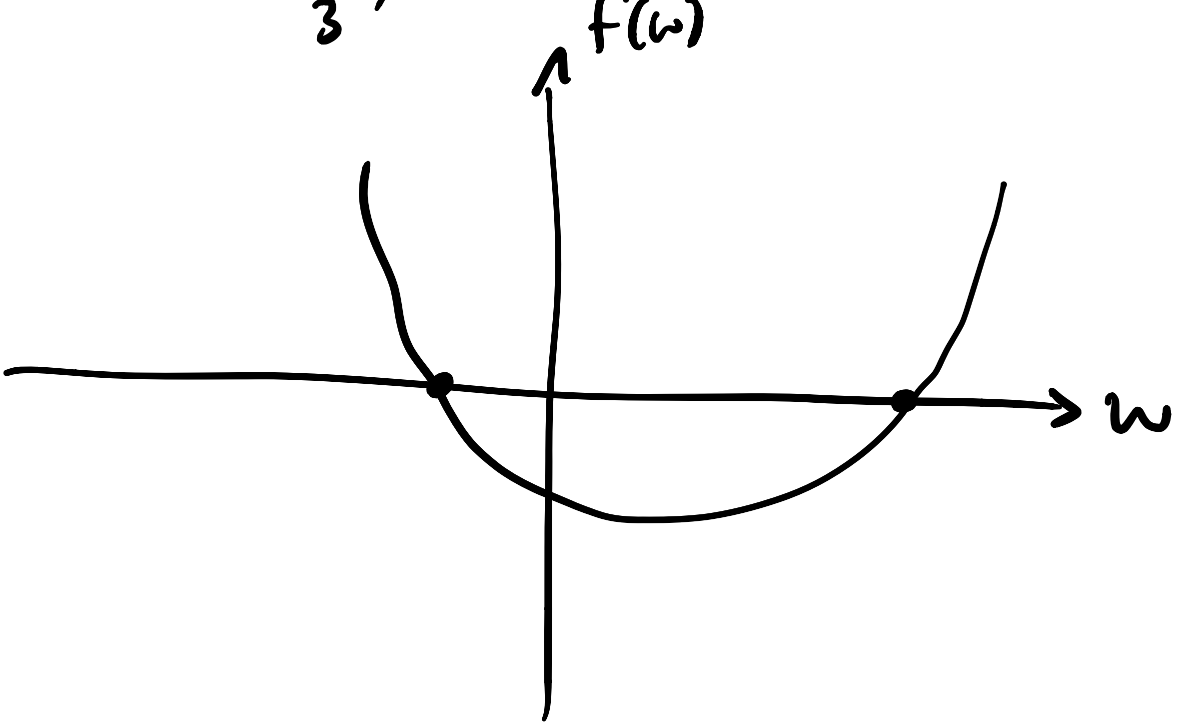
$$w = \frac{2 \pm \sqrt{4 - 4\times 3\times(-1)}}{}$$

2×3

$= \frac{2 \pm 4}{6}$

$= -\frac{2}{6}, \frac{6}{6}$

$= -\frac{1}{3}, 1$



So $f(w) > 0$ for $w < -\frac{1}{3}$ & $w > 1$

i.e. $\left(\frac{2}{3}\right)^{\sqrt{x}-1} < -\frac{1}{3}$ & $\left(\frac{2}{3}\right)^{\sqrt{x}-1} > 1$

But $\left(\frac{2}{3}\right)^{\sqrt{x}-1} > 0$ and so the only possible solution are for

$$\left(\frac{2}{3}\right)^{\sqrt{x}-1} > 1$$

$$\Rightarrow \quad \sqrt{x}-1 < 0$$

$$\Rightarrow \quad \sqrt{x} < 1$$

$$\Rightarrow \quad x < 1$$

So $x \in [0, 1)$