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Question 1 **(25 marks)**

(a) Write 6^{-2} and $81^{\frac{1}{2}}$ without using indices.

$6^{-2} =$

$81^{\frac{1}{2}} =$

(b) Express 2^{24} in the form $a \times 10^n$, where $1 \leq a < 10$ and $n \in \mathbb{Z}$, correct to three significant figures.

(c) Show that $\dfrac{\left(a\sqrt{a}\right)^3}{a^4}$ simplifies to $\sqrt{a}$.

(d) Solve the equation $49^x = 7^{2+x}$ and verify your answer.