Indices - Section Test

1) $2^3 \times 2^4$ can be written in the form 2^a.
What is the value of a ?

2) Write $(4^4)^2$ in the form 4^b.
What is the value of b ?

3) What is the value of 4^{-3} ?

(a) $\frac{1}{64}$ (b) $-\frac{1}{64}$

(c) $\sqrt[3]{4}$ (d) $-\sqrt[3]{4}$

4) What is the value $16^{3/4}$?

(a) 8 (b) $\frac{1}{4}$

(c) $\frac{1}{8}$ (d) 4

5) Evaluate $\left(\frac{9}{16}\right)^{-3/2}$

Give your answer as a fraction $\frac{a}{b}$ where a and b are integers and a is as small as possible.

6) Solve $2^x = 4$

7) The expression $3a^2b \times (2ab^{-2})^3$ can be simplified to give the expression

(a) $24a^5b^{-5}$ (b) $6a^5b^{-5}$

(c) $24a^3b^{-1}$ (d) $6a^3b^{-1}$

8) The expression $\frac{16\left(a^2b^3\right)^2}{(2ab^2)^3}$ can be simplified to give the expression

(a) $2a$ (b) $2a^2b$

(c) $32a$ (d) $8ab$

9) What are the roots of the equation $x^4 - 13x^2 + 36 = 0$?

(a) $x = 2, x = -2, x = 3$ and $x = -3$ (b) $x = 2$ and $x = 3$

(c) $x = \sqrt{2}, x = -\sqrt{2}, x = 3$ and $x = -3$ (d) $x = \sqrt{2}$ and $x = 3$

10) Solve the equation $4^x = \frac{1}{32}$. Give your answer as an exact decimal.