

7 (a) Given that $\log_a y = 2 \log_a 7 + \log_a 4 + \frac{1}{2}$, find y in terms of a .

[4 marks]

7 (b) When asked to solve the equation

$$2 \log_a x = \log_a 9 - \log_a 4$$

a student gives the following solution:

$$2 \log_a x = \log_a 9 - \log_a 4$$

$$\Rightarrow 2 \log_a x = \log_a \frac{9}{4}$$

$$\Rightarrow \log_a x^2 = \log_a \frac{9}{4}$$

$$\Rightarrow x^2 = \frac{9}{4}$$

$$\therefore x = \frac{3}{2} \text{ or } -\frac{3}{2}$$

Explain what is wrong with the student's solution.

[1 mark]