Logs and Exponentials LE3

Let $\log_b X = 4$, $\log_b Y = 5$, $\log_b Z = 2$, $\log_b W = 3$. Find:

1. $\log_b XY$

2. $\log_b \dfrac{Y}{Z}$

3. $\log_b X^2 W$

4. $\log_b \dfrac{Z^3}{W^2}$

5. $\log_b \dfrac{XY}{ZW}$

6. $\log_b (XW)^2$

Write the following as a single logarithm.

7. $\log_b X + \log_b Y$

8. $\log_b W - 2\log_b X$

9. $\log_b Y - \log_b Z - \log_b W$

10. $2\log_b Y - 3\log_b Z + 4\log_b X$

11. Which of the following is equal to $\log_3 7$?

a) $\dfrac{\log_7 7}{\log_3 7}$

b) $\dfrac{\log_2 7}{\log_2 3}$

c) $\dfrac{\log_2 3}{\log_2 7}$

d) $\dfrac{\log_3 7}{\log_3 3}$