

Laws of Logarithms

#5c)

Evaluate:

$$\begin{aligned} & \frac{\log_2 4 + \log_2 \sqrt{10}}{\log_2 20 + 3\log_2 2} = \frac{\log_2 (4\sqrt{10})}{\log_2 20 + \log_2 2^3} \\ & = \frac{\log_2 (4\sqrt{10})}{\log_2 20 + \log_2 8} = \frac{\log_2 (4\sqrt{10})}{\log_2 160} = \\ & = \frac{\log_2 (160)^{\frac{1}{2}}}{\log_2 (160)} = \frac{\frac{1}{2} \log_2 160}{\log_2 160} = \frac{1}{2} \end{aligned}$$