

$$\log_a xy = \log_a x + \log_a y$$

$$\log_a \left(\frac{x}{y} \right) = \log_a x - \log_a y$$

$$\log_a (x^k) = k \log_a x$$

$$\log_a \left(\frac{1}{x} \right) = -\log_a x$$

$$\log_a x = \frac{\log_b x}{\log_b a}$$

$$\log_a b = \frac{1}{\log_b a}$$

$$\log_a(x + y) = \log_a x \times \log_a y$$

$$\log_a(x - y) = \log_a x \div \log_a y$$

$$\log_a xy = \log_a x \times \log_a y$$

$$\log_a \left(\frac{x}{y} \right) = \log_a x \div \log_a y$$

$$\log_a(x^k) = \left(\frac{1}{k} \right) \log_a x$$

$$\log_a \left(\frac{1}{x} \right) = \frac{1}{\log_a x}$$

Give these cards to students in groups to decide which laws of indices are correct and which are not. Make use of the fact that $\log_a b = c$ is the same as $a^c = b$ to rewrite the problems and use autograph.