

1. Evaluate the expressions,

(a) $\log_8 320 - \log_8 5$

(b) $4^{\log_2 6}$

2. Order the following numbers from least to greatest. I think you should be able to do this without a calculator; if it helps $e \approx 2.71828$ and $\sqrt{10} \approx 3.16278$.

(a) $5^{\sqrt{10}}$

(b) $(5^{10})^{\frac{1}{2}}$

(c) $\ln(5^{10})$

(d) $\log_2(5^{10})$

(e) $\log_{10}(5^{10})$

3. Differentiate the following functions.

(a) $f(\theta) = 2^{\cos \theta}$

(b) $g(x) = x^{\frac{1}{x}}$

4. Evaluate the following integrals.

(a) $\int x^3 + 3^x dx$

(b) $\int_0^1 \frac{2^t}{1 + 2^t} dt$