

Math 29
PAL Worksheet 16

1. Find the exact value of each of the following without using a calculator.

a. $\log_9(\sqrt[4]{3^5})$ b. $3 \ln(e^{\frac{3}{5}})$ c. $\log_{b^2}\left(\frac{1}{b^3}\right)$ d. $\log(\log_{\sqrt{b}}(b^5))$

e. $b^{\log_b 17}$ f. $\log_b(b^{10})$ g. $\log_{\sqrt{b}}\left(\frac{1}{b}\right)$ h. $10^{2 \log 3}$

i. $(e^4)^{2 \ln 2}$ j. $(\sqrt{b})^{3 \log_b 5}$ k. $\log_a(\log_b(b^{a^5}))$ l. $(\sqrt[3]{b})^{\log_b 27}$

2. Find the exact value of x that solves each equation, then use your calculator to give an approximation of the solution, rounded to the nearest hundredth.

a. $e^{5x-1} = 77$

b. $9 \cdot 6^x = 188$

c. $7^{3x+2} = 11^x$

d. $2^{3x+4} = 3^{2x-1}$