Math 32 Worksheet
GSI: Sarah Iveson
http://math.berkeley.edu/∼siveson/32/
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Find two or three people to work with at the boards, and work through the following problems. Take turns writing; everyone should get a chance to write for some of the problems. Also, make sure everyone in your group understands the solution. Simply getting the answer is not the point of these worksheets, rather discuss the solution to make sure you and your other group members understand it.

Exponential and Logarithmic Functions

1. Use the properties of exponents to simplify the following expressions.

(a) $(\sqrt{2}^{\sqrt{2}})^{\sqrt{2}}$ **(b)** $(3^{2+\sqrt{5}})(3^{2-\sqrt{5}})$ **(c)** $\dfrac{10^{\pi+2}}{10^{\pi-2}}$ **(d)** $[(\sqrt{3})^{\pi}]^4$

2. Solve the following equations.

(a) $2^x = 32$ **(b)** $2^t = 1/4$ **(c)** $2^{3y+1} = \sqrt{2}$

(d) $8^{z+1} = 32\sqrt{2}$ **(e)** $3(3^x) - 5x(3^x) + 2x^2(3^x) = 0$ **(f)** $x^2(2^{x+2}) - 9(2^x) = 0$

3. Sketch a graph of the following functions and specify the domain, range, intercept(s), and asymptote.

(a) $y = -3^x + 3$ **(b)** $y = 3^{-x} - 3$ **(c)** $y = 2^{x-1} - 1$

(d) $y = 1 - 3^{x-1}$ **(e)** $y = -e^{-x}$ **(f)** $y = e^{-x} - e$

4. Evaluate each expression.

(a) $\log_{25}(1/625)$ **(b)** $\log_{16}(1/64)$ **(c)** $\log_{10}(10)$ **(d)** $\log_2(8\sqrt{2})$

5. Find the domain of each function.

(a) $y = \log_3 3x$ **(b)** $y = \ln(2 - x - x^2)$ **(c)** $y = \log_{10} \dfrac{2x+3}{x-5}$

(d) $y = \log_2(\log_2 x)$