Problem 1. Evaluate.

(a) $\log_3 81$

(b) $\log_{32} 8$

(c) $\log_2 96 - \log_2 3$

(d) $\log_5 \sqrt[3]{625}$

(e) $\log_{10} \dfrac{32}{5} - \log_{10} \dfrac{16}{25}$

Problem 2. Solve.

(a) $27^{5x-6} = 81^{2x+11}$

(b) $\log_{13} x = 2$

(c) $\log_2(x+5) + \log_2(x+1) = 3 + \log_2(x-1)$

(d) $1331^{(2x+1)} = \dfrac{1}{121^{(x-5)}}$

(e) $\log_x(x-2) + \log_x(x-6) = 2$

Problem 3. Solve.

(a) $625^{x^2-9} = 125^x$

(b) $27^{x+2} = \frac{1}{9}$

(c) $\log_4(x) + \log_8(x) = 5$

(d) $49^{(2x+1)} = \frac{1}{343^{(x-5)}}$

(e) $\log_{(x+1)}(5x+3) + \log_{(x+1)} x = 3$

(f) $\log_5(25x) = 3$

Problem 4. Solve.

(a) $2\log_7(x-3) = \log_7(x-1)$

(b) $\log_x(2) + \log_x(x+1) = \frac{1}{2}$

(c) $e^{2x} - 3e^x - 8 = 20$

(d) $2\ln(x) = \ln(x+2) + \ln(x+5)$

(e) $\log_{5x} 343 = \frac{1}{49}$

(f) $2\ln(x+1) = 2\ln(3) + \ln(x+5)$