Review 7.5-7.7
Honors Algebra 2

1. Use $\log_5 2 \approx 0.4307$ to approximate the value of $\log_5 4$

2. Use $\log_5 2 \approx 0.4307$ and $\log_5 3 \approx 0.6826$ to approximate the value of:
   a. $\log_5 \frac{15}{4}$ b. $\log_5 6$ c. $\log_5 72$

3. Expand the following expressions
   a. $\ln(x^6 y^3)$

   b. $\log_7\left(\frac{x^3}{y}\right)^3$

   c. $\log_6(c^5 \cdot \sqrt[3]{a})$

4. Condense the following expressions
   a. $4\log_2 11 - 6\log_2 6$

   b. $\log_7 z + \frac{1}{3}\log_7 x - \log_7 2$

5. Solve:

a. $\log_6 10 + \log_6 x = \log_6 40$

b. $4^x = 20$

c. $\ln 3x = 1$

d. $\log_4(m-3) + \log_4(m+3) = 2$

e. $6^{3n} = 43^{5n-4}$

f. $4 + 3e^{5x} = 27$

g. $\log_5 n = \frac{1}{3}\log_5 64 + \frac{1}{2}\log_5 49$

h. $\log_6(5 - 2a) - \log_6(3a) = 1$

i. $\log_3(x - 3) + \log_3(x + 2) = \log_3 6$

j. $7^{n+3} = 80$

k. $3^n = 6^{n-2}$

l. $\ln(x + 4) = 4$

6. Evaluate:
   a. $3\log_2 64 + e^{\ln 5} + \log_{1/3} 9$

7. Solve:
   a. $5^{\log_5 2x - \log_5 (x-3)} = \ln e^{x+4}$

Challenge:

Solve $\log_x \left[\log_2 (\log_3 81)\right] = 2$