a) $\ln 6 - \ln 2 = \ln \frac{6}{2} = \ln 3$

b) $\ln e^2 = 2$

c) $\ln \frac{1}{e^x} = \ln 1 - \ln e^x = 0 - x = -x$

d) $e^{\ln 4} = 4$

e) $e^{2\ln 5} = e^{\ln 5^2} = e^{\ln 25} = 25$

f) $e^{-\ln 3} = \frac{1}{e^{\ln 3}} = \frac{1}{3}$

$e^{-\ln 3} = e^{-1 \times \ln 3} = e^{\ln 3^{-1}} = e^{\ln \frac{1}{3}} = \frac{1}{3}$

g) $\ln \sqrt{e} = \ln e^{1/2} = \frac{1}{2}$

h) $\ln (e^{-x}) = -x$