New Keynesian Unemployment: Practice Problem

Intermediate Macroeconomics
John T. Dalton

**Question 1** Suppose the turnover costs of hiring new labor for a firm are given by the function $c\left(\frac{w}{p}\right) = -\ln\left(\frac{w}{p}\right)$. Suppose that the production function is given by $Y^s = 2(L^D)^\frac{1}{2}$.

a) Find the efficiency wage and the employment level of the firm.

b) If labor supply is given by $L^s = 2\left(\frac{w}{p}\right)$, what is the natural rate of unemployment in this economy?

**Question 2** Suppose the turnover costs of hiring new labor for a firm are given by the function $c\left(\frac{w}{p}\right) = 4\left(\frac{w}{p}\right)^{-1}$.

a) What is the marginal benefit to the firm of an increase in $\frac{w}{p}$?

b) Find the efficiency wage of the firm.

c) If the labor demand curve is $L^D = 2\left(\frac{w}{p}\right)^{-1}$ and labor supply curve is $L^s = \frac{w}{p}$, then is the efficiency wage you calculated in part b) higher or lower than the market-clearing real wage, i.e. the real wage prevailing under perfect competition? Show your answer mathematically.