New Keynesian Unemployment: Practice Problem

Intermediate Macroeconomics
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Question 1 Suppose the turnover costs of hiring new labor for a firm are given by the function $c\left(\dfrac{w}{p}\right) = -\ln\left(\dfrac{w}{p}\right)$. 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 $L^S = 2\left(\dfrac{w}{p}\right)$, 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 $c\left(\dfrac{w}{p}\right) = 4\left(\dfrac{w}{p}\right)^{-1}$.

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

    b) Find the efficiency wage of the firm.

    c) If the labor demand curve is $L^D = 2\left(\dfrac{w}{p}\right)^{-1}$ and labor supply curve is $L^S = \dfrac{w}{p}$, 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.