28. (a) The derivative of $P(E)$ is

$$\left(\frac{-1}{\left(e^{(E-E_F)/kT}+1\right)^2}\right)\frac{d}{dE}\,e^{(E-E_F)/kT} = \left(\frac{-1}{\left(e^{(E-E_F)/kT}+1\right)^2}\right)\frac{1}{kT}\,e^{(E-E_F)/kT}\ .$$

Evaluating this at $E = E_F$ we readily obtain the desired result.

(b) The equation of a line may be written $y = m(x - x_o)$ where m is the slope (here: equal to $-1/kT$, from part (a)) and x_o is the x-intercept (which is what we are asked to solve for). It is clear that $P(E_F) = 2$, so our equation of the line, evaluated at $x = E_F$, becomes $2 = (-1/kT)(E_F - x_o)$, which leads to $x_o = E_F + 2kT$.