Exercise 8

1. Estimate the A-term contribution to the $\mu \to e\gamma$ width. Assuming A_{e21} is proportional to the μ Yukawa coupling, $\mathbf{A_{e21}} = a_\mu M_{\text{SUSY}} y_\mu$, what is the bound on a_μ?

2. Consider the Higgs-Higgsino-Bino coupling y'

$$\mathcal{L}_{int} = \frac{\sqrt{2}y'}{2} H_u^{0*} \tilde{H}_u^0 \tilde{B} + h.c. \ . \tag{1}$$

At tree-level this coupling is equal to the $U(1)_Y$ gauge coupling (i.e. $y' = g'$). Using a renormalization group argument estimate the $\mathcal{O}(y_t^2)$ splitting of y' and g' due to the splitting of the top squark masses and the top quark mass. You can take the left and right top squark masses to be equal.