Prove the following derivations. You may use any rules you like, except for the last problem.

1 $\exists x \exists y Rxy \rightarrow \forall z Gzz \vdash \forall x \forall y Rxy \rightarrow (\neg Gaa \rightarrow P)$

2 $\forall x Fx \vee \exists y Gy, \neg \exists y Gy \vdash (Fa \wedge Fb) \vee P$

Prove this WITHOUT using QN

3 $\neg \exists \neg Ax \vdash \forall x Ax$