Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] A line $\ell'$ passes through points $(-2, 602)$ and $(98, 2)$. A second line $\ell$ is perpendicular to $\ell'$ and passes through $(-1, 5)$. Find an equation for line $\ell$.

2. [4 points] The population of a certain rare bird species found in a nature reserve was 860 in 2010 and declined to 580 by 2024. Wildlife scientists believe that the decline is linear.

   (a) Find a model $P(t)$ for the population at time $t$. If you follow any conventions state them explicitly.

   (b) Predict when the species will become extinct in this reserve. Show all work.

3. [4 points] Suppose your dad is trying to decide which cell phone plan to enroll in, based on the following monthly plans.

- Plan A costs \$36 plus 10 cents per gigabyte of data transferred;
- Plan B costs \$60 plus 4 cents per gigabyte of data transferred.

Can you help your dad decide under which circumstances Plan A is preferable? Show him all your work and state your conclusion clearly, to avoid getting him confused.