1.) Albinism is inherited as an autosomal recessive. In the figure below, circle all those individuals whose genotype is known to be Aa (7 individuals should be circled). Assume that persons from the general population (outside of the family) are not heterozygous for albinism (Aa).

2.) The following pedigree shows the segregation of two different autosomal recessive traits (an individual shows the trait if homozygous recessive). Use $A$ and $a$ to designate the dominant and recessive alleles of locus $A$ for trait “A”. Use $B$ and $b$ to designate the dominant and recessive alleles of locus $B$ for trait “B”.

a. List **ALL** of the possible genotypes for individual 3 (1 point). Aabb
b. List **ALL** of the possible genotypes for individual 1 (1 point). For both individuals show the alleles at both locus $A$ and locus $B$ (for example, $AA BB$). AaBb or AABb
**Deducing paternal genotype** – The father shows trait ‘A’ only, so he must be aaBb or aaBB. Suppose that he is aaBB, however. This would result in the daughter being either Bb or BB, and thus would not be able to show trait ‘B.’ This means that he must be aaBb.

**Deducing maternal genotype** – Individual 1 doesn’t show trait ‘A’ or trait ‘B.’ She cannot be homozygous dominant for locus B, since we know that her daughter is homozygous recessive. There is no restriction on A, so she can either be AaBb or AABb.

**Deducing the female daughter genotype** – Individual 3 shows trait ‘B’ only, so we know that she must be AAbb or Aabb. Since the father shows trait ‘A,’ however, this means that he is aaBb (from explanation above). This means that she must have at least one recessive allele. As a result, she is Aabb.

3.) What are the genotypes of individuals a, b, c, d, and e? What mode of inheritance does this disease follow? Unshaded individuals are phenotypically normal.

- Individual a  Aa
- Individual b  Aa
- Individual c  aa
- Individual d  aa
Individual e  AA or Aa

**Autosomal Dominant inheritance**

4.) What are the genotypes of individuals a, b, c, and d? What mode of inheritance does this disease follow? Unshaded individuals are phenotypically normal.

- Individual a  aa
- Individual b  Aa
- Individual c  Aa
- Individual d  AA or Aa

**Autosomal Recessive inheritance**