Optical Purity Worksheet

1. A solution has 80% (R)-2-bromobutane and 20% (S)-2-bromobutane
2. What is the “enantiomeric excess” of (R)-2-bromobutane?
3. If pure (R)-2-bromobutane rotates light 100º to the right, how much rotation would occur for a solution with 80% (R)-2-bromobutane and 20% (S)-2-bromobutane
4. If a solution has a 50/50 mixture of (R)- and (S)-2-bromobutane, what would be the enantiomeric excess and the optical purity?
5. If a solution has a 50% ee, what would be the ratio of enantiomers?

a. 50% R, 50% S or

b. 75% R, 25% S

1. A 0.44 g/mL sample of codeine is put in a 1.5-cm polarimeter tube. The D-line of sodium was used to measure the rotation of the sample. The observed rotation was -9.0°. Using this data, find the specific rotation of codeine.
2. If optically pure (S)-2-deuterobutane is known to have a specific rotation of [a] = +10°, and the final product is observed to have [a] = -9°, what can be concluded about the product with respect to its
3. optical purity =
4. enantiomeric excess =
5. composition in % (R) and % (S) =
6. A mixture of two enantiomers has as observed rotation of -18°. The specific rotation of the (-) enantiomers is -27°. Find the % of the two enantiomers in the solution.