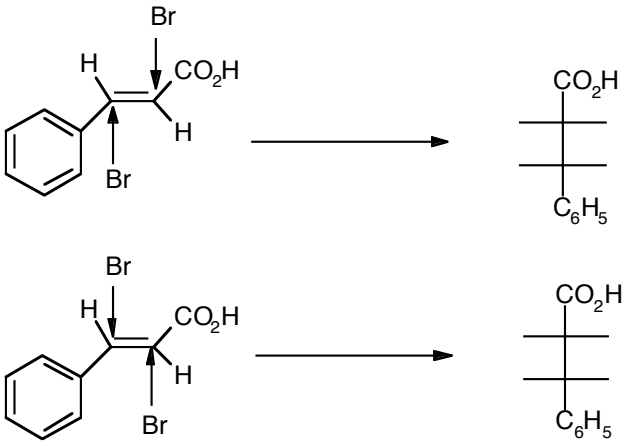
Name: _____ Section: _____

Chem 226 / Dr. Rusay
Stereochemistry II: Worksheet #10

1. The addition of bromine to cinnamic acid introduces two chiral carbon atoms to produce a vicinal dibromide. The bromination mechanism is regarded to be stereospecific where the bromine atoms add in an *anti* fashion as illustrated below. Complete the Fisher drawings for the diastereomeric pairs that are formed and classify the compounds as either **erythro or threo.** Using the Cahn-Ingold-Prelog priorities, assign an absolute configuration (***R-* or *S-*)** to each of the stereocenters (chiral carbon atoms) in each of the products. Make molecular models to confirm your assignments if necessary.

trans-cinnamic acid:



Classification

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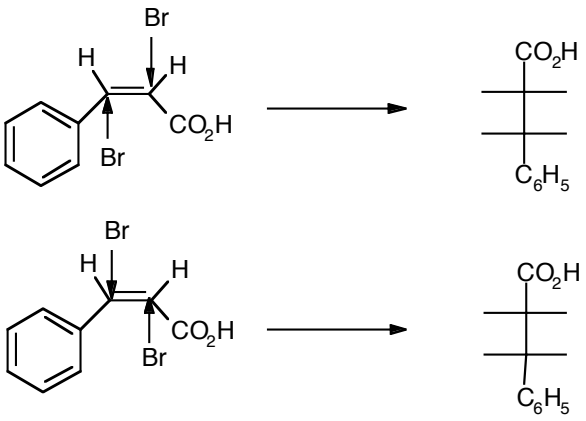
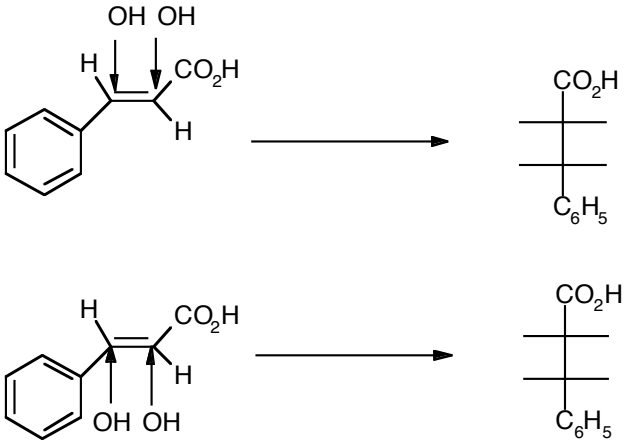
cis-cinnamic acid:



Classification

2. When osmium tetroxide is reacted with cinnamic acid, two chiral carbon atoms are introduced to produce a vicinal diol. The mechanism is regarded to be stereospecific where the –OH groups add in a *syn* fashion as illustrated below. Complete the Fisher drawings for the diastereomeric pairs that are formed and classify the compounds as either **erythro or threo.** Using the Cahn-Ingold-Prelog priorities, assign an absolute configuration **(*R*- or *S*-)** to each of the stereocenters (chiral carbon atoms) in all of the products. Make molecular models to confirm your assignments if necessary.

trans-cinnamic acid:



Classification

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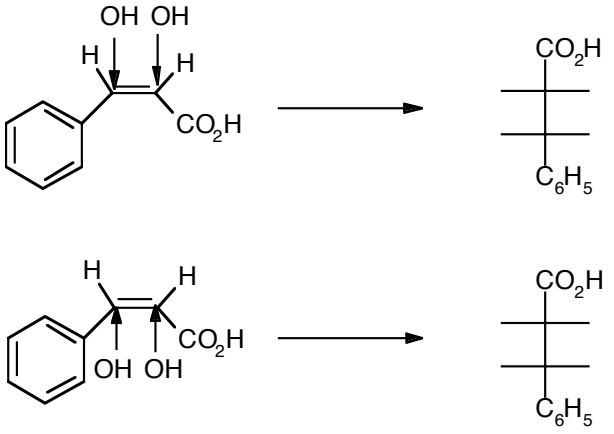
cis-cinnamic acid:



Classification

3. Provide 3-d structures of the 2 dibromide products formed from the bromination of cyclopentene. Are they chiral or achiral? Is the product mixture optically active?	Provide a 3-d structure of the diol product formed from the reaction of osmium tetroxide with cyclohexene. Is it chiral or achiral? Is the product optically active?