20.20:

starch + water = glucose

starch: polysaccharide

glucose: monosaccharide

20.28: What is a carbohydrate?

Carbohydrates are a large class of naturally occurring polyhydroxy aldehydes or ketones. They are also sugar molecules.

$C_x(H_2O)_y$

20.31: Classify the four carbohydrate (a)-(d) by indicating the nature of the carbonyl group and the number of carbon atoms present.

(a) **Threose** - aldotetrose — 4-C, H–C=O

(b) **Ribulose** - keto pentose — 5-C, C=O

(c) **Xylose** - aldo pentose — 5-C, H–C=O

(d) **Tagatose** - ketonexose — 6-C, C=O

20.32: How many chiral carbon atoms are present in each of the molecules shown in Problem 20.31?

(a) therose = 2 chiral carbon atoms

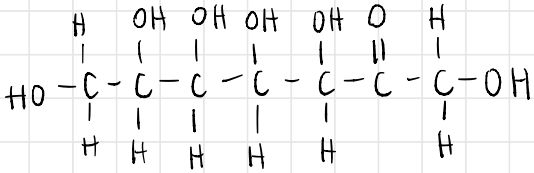
(b) Ribulose = 2 chiral carbon atoms

(c) xylose = 3 chiral carbon atoms

(d) tagatose = 3 chiral carbon atoms

20.34: Draw the open-chain structure of a ketoheptose.

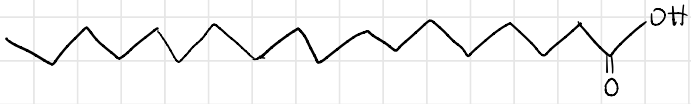
7-carbons



23.27: Name two classes of lipids found in your body.

1. phospholipids
2. steroids

23.28: Draw an 18-carbon saturated fatty acid. Is this a "straight-chain" molecule or a "bent" molecule?



- this is a straight chain

23.41: What functions do fats serve in an animal?

- it acts as a reserve to supply energy
- acts as insulation and a protection barrier
- also plays a role in regulating and signaling

23.46: What is the name of the reaction that converts unsaturated fatty acids to saturated fatty acids?

- Hydrogenation reaction

23.64: What is a major function of cholesterol in the body?

- its main function is to maintain the integrity and the fluidity of cell membranes.
- in our body, it aids in production of sex hormones, assists in bile production, and are building blocks for our tissues