LARSON—OPER 731—CLASSROOM WORKSHEET 12
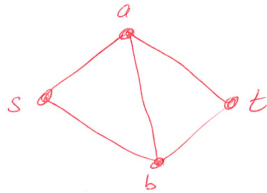### Duality!

Concepts

- (Sec. 2.4) *basis*, *basic* variable, *nonbasic* variable, *basic solution*, *basic feasible solution*, *canonical form*.

- (Sec. 2.8) *hyperplane*, *halfspace*, *line*, *line segment*, *convex*, *polyhedron*, *tight* inequality, *extreme point*.

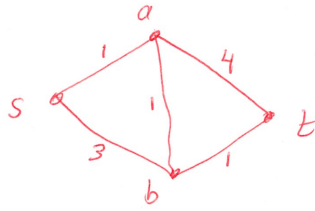- (Sec. 3.1) *dual LP*, *Weak duality theorem*.

Review

1. What is the *Weak Duality Theorem*?

2. Find the (unweighted) shortest-path IP.

3. Find the dual for the (unweighted) shortest-path IP and try to interpret its *meaning*.

4. Find the (weighted) shortest-path IP.

5. Find the dual for the (weighted) shortest-path IP and try to interpret its *meaning*.

6. What is the *Strong Duality Theorem?*