3. **Price Discrimination.** The Fun-Land Amusement Park is a 40-acre fun park full of rides, shows, and shops. Fun-Land's marketing department segments its customer base into two parts: local patrons and tourists. Fun-Land assumes local patrons are more price sensitive than out-of-town tourists. Yearly demand and marginal revenue relations for overnight lodging services, Q, are as follows:

Locals

$P_L = \$40 - \$0.0005Q_L$

$MR_L = \Delta TR_L/\Delta Q_L = \$40 - \$0.001Q_L$

Tourists

$P_T = \$50 - \$0.0004Q_T$

$MR_T = \Delta TR_T/\Delta Q_T = \$50 - \$0.0008Q_T$

Average variable costs for labor and materials are constant at $20 per unit.

A. Assuming the company can discriminate in pricing between locals and tourist customers through coupons distributed to locals via local shops, calculate the profit-maximizing price, output, and total profit contribution levels.

B. Calculate point price elasticities of demand for each customer class at the activity levels identified in part A. Are the differences in these elasticities consistent with your recommended price differential? Explain.