

Calculus Challenge Problem # 4

Students did a nice job with the calculus and generally gave good interpretations of the values of elasticity for each of the scenarios. Some of the explanations could have been helped by giving an illustration of the effect being described. For example, if $D(p) = 1000 \cdot e^{-0.015p}$, then at a price of \$100, $E(100) = -0.015 \cdot (100) = -1.5$. The demand is elastic, so increasing prices should increase revenue, while at a price of \$60, $E(60) = -0.015 \cdot (60) = -0.9$ and an increase in price should decrease revenue. This is illustrated by considering the revenue at \$101 and at \$61. At \$100, the demand is $D(100) = 223$ creating a revenue of \$22,300. Increasing the price to \$101 will result in a demand of $D(101) = 220$ and a resulting revenue of \$22,000. At \$60, the demand is $D(60) = 407$ creating a revenue of \$24,420. Increasing the price to \$61 will result in a demand of $D(61) = 401$ and a resulting revenue of \$24,461.

Results:

School	Teacher	Score	Cumulative Score
Bellville High School	Trudy Durham	5	20
Benjamin Cardozo High School	Ken Rubel	5	20
Blessed Trinity Catholic High School	Amy Muller	4	10
Eagle's Landing Christian Academy	Deborah Brown		2.5
Fike High School	Christie Wuebbles		4.5
Gleneagle Secondary School	Nevena Savovic	4.5	17.5
Gray Stone Day School	Robin Dassler		8.5
Hickman High School	Deanna Wasman	5	18.5
Head-Royce School	Shahana Sarkar		4.5
La Habra High School A	Barbara De Roes		5
La Habra High School B	Barbara De Roes		10
North Lamar High School	Kathy Stewart		3.5
Norwalk High School	Chris Higgins		4.5
Pine View School	Ann Hankinson	5	20