There are 400 parking places in the area between Heady Hall (home of the prestigious Economics Department) and the Lied Athletic Center. These parking spots are fixed in number and ISU has no plans to increase them in the near future. These parking places are used mainly by ISU faculty and staff who come to the east end of campus to make their daily contribution to society. The demand for these parking spots is given by

\[ Q_e(p) = \frac{400}{p}. \]

a) What is the equilibrium price and quantity in the parking market?

The university administration considers that the equilibrium price is not fair. “Faculty and staff should not pay exorbitant prices for parking when they come to help the university fulfill its mission”, stated the Dean of Parking and Transportation, thus convincing the administration to impose a price ceiling of \( p_c = 1/2 \).

b) How many people are able to park under this fair ceiling?

c) How many people are willing to park under this price ceiling regulation?

d) How many people are unhappy? (What is the size of the shortage?)

e) How many additional parking spots should be built in order for the corresponding equilibrium price to be equal to the current price ceiling?

f) What is the elasticity of demand? (Compute it using the equilibrium price and the price ceiling).

There are 400 additional parking spots towards the west side of campus, which are used mainly by faculty and staff that work over there. These people, however, have a different demand function, which is given by

\[ Q_w(p) = \frac{400}{p^2}. \]

g) What would be the equilibrium price and quantity if there was no price ceiling?

h) How many people are able to park under this fair ceiling?

i) How many people are willing to park under this price ceiling regulation?

j) How many people are unhappy? (What is the size of the shortage?)

k) How many additional parking spots should be built in order for the corresponding equilibrium price to be equal to the current price ceiling?

l) What is the elasticity of demand? (Compute it using the equilibrium price and the price ceiling).

m) What can you say about the relationship between the elasticity of demand and the size of the shortage created by the imposition of the “fair” price?
The university is building a new building for the good old Business School, across from Heady Hall. After the building is finished, the Business School faculty and staff will be expected to park their vehicles in the east side parking lot. Their demand for parking space is given by

\[ Q^{BS}(p) = \frac{200}{p}. \]

So next year, when the building will be completed and fully inhabited, this demand will be added to the current demand.

**n)** If the university does not change its policy of fair price, what will the size of the resulting shortage will be?