In a particular town there are 100 cars and 50 motorcycles. Each car owner has a demand curve for petrol given by: Qdc = 20 − 5p for p ≤ 4 and Qdc = 0 for p > 4. Each motorcycle owner has the following demand function for petrol: Qdm = 15 − 3p for p ≤ 5 and Qdm = 0 for p > 5.

a) If the price is SR 3, then:

(i) each car owner will buy Q = 20 - 5*3 = 5 gallons of petrol per week.

(ii) each motorcycle owner will buy Q = 15 - 3*3 = 6 gallons of petrol per week.

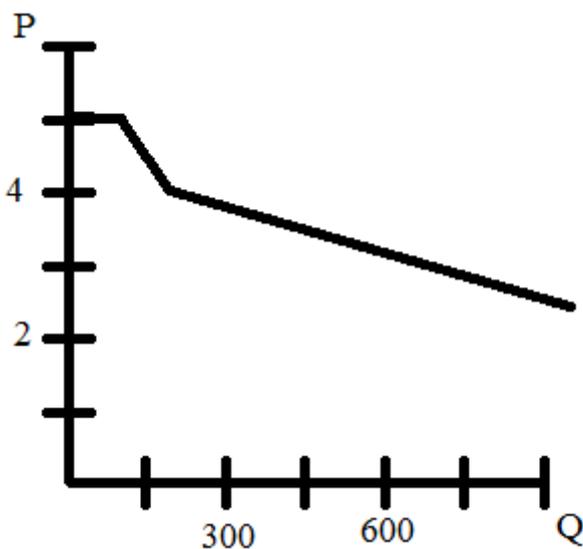Question: Write an algebraic expression for the market demand function.
Solution:

QD= 100*(20-5p)+50*(15-3p)=2750-650p, where p≤ 4;

QD= 50*(15-3p)=750-150p, where p≤ 5;

QD=0, where p>5.