We are now ready to determine the "most preferred" combination of commodities Q_1 and Q_2. The consumer will choose the combination of commodities to maximize his utility, given *his income constraint.* This is equivalent to maximizing the following function:

$$V = U(q_1, q_2) + \lambda(M_1 - q_1p_1 - q_2p_2) \tag{5}$$

where λ is the Lagrangean Multiplier. The conditions for maximizing constrained utility are fulfilled when the partial derivatives of Equation (5), with respect to q_1, q_2, and λ are set equal to zero:

$$\frac{\partial V}{\partial q_1} = \frac{\partial U}{\partial q_1} - \lambda p_1 = 0 \tag{6}$$

$$\frac{\partial V}{\partial q_2} = \frac{\partial U}{\partial q_2} - \lambda p_2 = 0 \tag{7}$$

$$\frac{\partial V}{\partial \lambda} = M_1 - q_1 p_1 - q_2 p_2 = 0 \tag{8}$$

The consumer maximizes his constrained utility by consuming those quantities of Q_1 and Q_2 that satisfy Equation (8) and the following first-order condition:

$$\frac{\partial U}{d q_1} \div \frac{\partial U}{d q_2} = \frac{p_1}{p_2} \tag{9}$$

That is, Q_1 and Q_2 will be consumed until the ratio of their marginal utilities equals the ratio of their respective prices, and all income is spent.

The maximization of constrained utility is illustrated graphically in Figure 4. The consumer's budget constraint is superimposed on his indifference map. Money income is M_1, and the price of commodities Q_1 and Q_2 are p_1 and p_2, respectively. Indifference curve U_2 represents the highest level of utility that is attainable with the given budget constraint. Therefore, the consumer will maximize his utility by consuming q_1^o units of Q_1, and q_2^o units of Q_2.

The consumer's demand curve for a commodity may be derived from his indifference map. A demand curve is a schedule that shows the various quantities that the consumer will purchase at various prices.