

Section 13.9

1) See Problem 9, Section 13.9

Let $x = \text{Length}$ $y = \text{width}$ $z = \text{height}$ $C = \text{cost for the paint}$

a) Volume = $xyz = \underline{\hspace{2cm}} ?$

b) Cost Function in terms of x, y, z : $C = \underline{\hspace{2cm}} ?$

c) $C_x = \underline{\hspace{2cm}} ?$

d) $C_y = \underline{\hspace{2cm}} ?$

e) For minimum cost: $x = \underline{\hspace{2cm}} ?$ $y = \underline{\hspace{2cm}} ?$ $z = \underline{\hspace{2cm}} ?$

2) See Problem 13, Section 13.9

Let $x_1 = \text{units of running shoes}$ $x_2 = \text{units of basketball shoes}$

a) Revenue Function: $R(x_1, x_2) = \underline{\hspace{2cm}} ?$

b) $R_{x_1}(x_1, x_2) = \underline{\hspace{2cm}} ?$

c) $R_{x_2}(x_1, x_2) = \underline{\hspace{2cm}} ?$

d) For maximum revenue: $x_1 = \underline{\hspace{2cm}} ?$ $x_2 = \underline{\hspace{2cm}} ?$

3) See Problem 15, Section 13.9

a) $P(p, q, r) = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

b) Write r in terms of p and q : $r = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

c) Write P in terms of only p and q : $P = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

d) $\frac{\partial P}{\partial p} = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

e) $\frac{\partial P}{\partial q} = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

f) Setting $\frac{\partial P}{\partial p} = 0$ and $\frac{\partial P}{\partial q} = 0$; solve for p and q : $p = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$ $q = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

4) See Problem 17, Section 13.9

a) Distance from P to $Q = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

b) Distance from Q to $R = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

c) Distance from R to $S = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

d) Cost Function: $C(x, y) = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

e) $C_x(x, y) = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

f) $C_y(x, y) = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$

g) For minimum cost: $x = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$ $y = \underline{\hspace{2cm}} ? \underline{\hspace{2cm}}$