Assume that the short-run cost and demand data given in the table below confront a monopolistic competitor selling a given product and engaged in a given amount of product promotion. Compute the marginal cost and marginal revenue of each unit of output and enter these figures in the table.

 **Total Marginal Quantity Marginal**

 **Output cost cost demanded Price   revenue**

 0 $ 75 0 $180

 1 120 $ 45 1 165 $ 165

 2 135 15 2 150 135

 3 165 30 3 135 105

 4 210 45 4 120 75

 5 270 60 5 105 45

 6 345 75 6 90 15

 7 435 90 7 75 – 15

 8 540 105 8 60 – 45

 9 660 120 9 45 – 75

 10 795 135 10 30 –105

 (a) At what output level and at what price will the firm produce in the short run? What will be the total profit?

 (b) What will happen to demand, price, and profit in the long run?

a) The firm will produce 4 units of output. At that level, marginal revenue ($75) is greater than marginal cost ($45), but as close to equality as possible. Total profit will be $270 ($480–$210).

 (b) The demand for the firm’s product will decrease until price equals average cost and total profits are zero.