

Name: _____

1. [3 parts, 1 point each] The following table shows world bicycle production in millions.

Year	1950	1960	1970	1980	1990	2000
Bicycle Production	11	20	36	62	92	110

- (a) Find the average rate of change in bicycle production between 1960 and 1980. Include units.
- (b) Find the relative change in bicycle production between 1980 and 1990.
- (c) During which decade was the relative change in bicycle production the least?
2. [2 parts, 1 point each] A demand curve is given by $15p + 60q = 240$, where p is the price of the product in dollars and q is the quantity that the market demands at price p .
- (a) Find the p -intercept of the curve. Give units and interpret your answer in terms of consumer demand.
- (b) Find the q -intercept of the curve. Give units and interpret your answer in terms of consumer demand.

3. [**2 parts, 1 point each**] Average Rate of Change.

(a) Find the average rate of change of $f(x) = x^2 - 1$ between $x = -2$ and $x = 0$.

(b) Illustrate your answer to part (a) graphically, clearly indicating the connection between the average rate of change and the relevant feature(s) of the graph.

4. [**3 parts, 1 point each**] A softdrink company pays \$3000 to maintain its equipment and spends \$0.25 to make each bottle. Bottles are sold in vending machines for \$1 each.

(a) Find formulas for the cost and revenue functions.

(b) Find the marginal cost and marginal revenue.

(c) Find the break-even point.