Derivative Applications
3.5 – Interpretations

#1) F(x) = the temperature of oil at time x
x = time in hours

Interpret f '(5) = 12

At 5 hours, the temperature of the oil is increasing by 12° per hour.

#2) P(x) = population of a town after x weeks
x = number of weeks

Interpret P'(13) = 120 people/week

After 13 weeks, the population is increasing by 120 people per week.

#3) G(x) = number of words a person can memorize in x minutes
x = number of minutes

Interpret G'(14) = 5

In 14 minutes, the number of words a person can memorize is increasing by 5 words per minute.

#4) h(x) = the number of cars sold on day x of advertising
x = number of days of advertising

Interpret h'(7) = 13

On day 7 of advertising, the number of cars sold per day is increasing by 13 cars per day.

#5) B(x) = the number of bacteria in a culture x hours after patient was given an antibiotic
x = number of hours

Interpret B'(5) = -100,000

Five hours after a patient was given an antibiotic, the number of bacteria is decreasing by 100,000 bacteria per hour.

#6) P(x) = total profit from selling x computer chips
x = number of computer chips
AP(x) = average profit per unit
AC(x) = average cost per unit

Interpret P'(70) = 50

When 70 computer chips have been sold, the total profit is increasing by $50 per chip sold.

Interpret MAP(70) = 4

When 70 computer chips have been sold, the average profit is increasing by $4 per chip sold.

Interpret MAC(70) = -0.25

When 70 computer chips have been made, the average cost is decreasing by 25¢ per chip made.

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Derivative Applications
3.5 – Interpretations

S. D. P.

#7) H(x) = amount of sulfur dioxide pollution measured in parts per minute
x = miles downwind from the plant

Interpret H'(2) = -2000

Two miles downwind from the plant, the amount of S.D.P is decreasing by 2000 parts per minute each mile.

#8) A(t) = cross sectional area, measured in square centimeters, of a blood vessel *t* hours after a nitroglycerine is administered
t = hours after nitroglycerine is administered

Interpret A'(4) = .10

Four hours nitro is administered, the cross sectional area of a blood vessel is increasing by 0.10 cm^2 per hour.

#9) W(t) = weight of a typical hailstone (in ounces) that remains in a cloud for t minutes
t = the number of minutes hailstone is in cloud

Interpret W'(2) = 3 oz/min

Two minutes after a hailstone is in a cloud, the weight of the hailstone is increasing by 3 ounces per minute.

#10) P(t) = the number of phrases a student can memorize in t hours
t = number of hours

P'(4) = 12 phrases/hour

Four hours after studying, the number of phrases memorized is increasing by 12 phrases per hour.

#11) P(n) = total profit from selling n X-Box 360s.
n = number of X-Box 360s
AP(n) = average profit per unit
AC(n) = average cost per unit

Interpret P'(700) = 100

After selling 700 X-Boxs, the total profit is increasing by $100 per X-Box sold.

Interpret MAP(700) = 12.50

After selling 700 X-Boxs, the average profit is increasing by $12.50 per X-Box sold.

Interpret MAC(700) = -2.22

After selling 700 X-Boxs, the average cost is decreasing by $2.22 per X-Box made.

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