Answer to Previous Problem: 20,000 ____

A) Let $s(t) = \frac{t}{e^t}$ be the position function (meters vs. seconds) of a particle moving along an axis. Find the exact position of the particle when it first reverses direction.

Answer to Previous Problem: After 2 seconds.

B) A manufacturer sells liquid penicillin at $200 per unit. If the total production cost (in dollars) for *x* units is $C(x) = 500,000 + 80x + 0.003x^2$ and the production capacity of the manufacturer is at most 30,000 units per month, how many units of penicillin do they need to manufacture and sell in that time to maximize profits?

Answer to Previous Problem:

$\frac{25}{16} m/s$ to the left at 2 seconds.

C) An open box is to be made from a 16x30 cm piece of cardboard by cutting out squares of equal size from the four corners and bending up the sides. What size should the side lengths of the squares be to obtain a box with the largest volume?

Answer to Previous Problem: 10/3 ___

D) A closed cylinder can is being designed to hold 1 liter (1000 cm^3) of soda. How should the designer choose the height and radius to minimize the amount of material needed to manufacture the can?

Answer to Previous Problem: 625 _____

E) Let $s(t) = t^3 - 6t^2 + 9t + 1$ be the position function (meters vs. seconds) of a particle moving along an axis. When is the particle slowing down?

Answer to Previous Problem:
5.4 and 10.8 ___

F) Let $s(t) = t + \frac{9}{t+1}$ be the position function (meters vs. seconds) of a particle moving along an axis. When is the particle speeding up?

Answer to Previous Problem:
1/e ____ at 1 ____.

G) A garden is laid out in a rectangular area and protected by chicken wire. Only 100 feet of chicken wire is available. What is the largest possible area for the garden?

Answer to Previous Problem: 0 to 1 seconds and 2 to 3 seconds.

H) Let $s(t) = \frac{100}{t^2+12}$ be the position function (meters vs. seconds) of a particle moving along an axis. Find the maximum speed of the particle
on $t \geq 0$, and find the direction of motion when it has the maximum speed.

AP Calculus BC
Week 6, Day 3

Name:
Period: Date:

6.3 Derivative Applications

Use the letter in the upper-right corner of the station to copy the problem in the appropriate box then show all work to complete the problem. To find the next problem, find the station with the answer listed at the top of it and repeat the process. Circle your final answer to each problem!

Problem A)	Problem B)
Problem C)	Problem D)

Problem E)	Problem F)
Problem G)	Problem H)

Homework: Section 5.5 #5, 9, 13, 17, 21. Section 5.6 #5, 11, 15, 29

Answer key
A G E H C D F B