A: Find the absolute extreme values of each function on the interval given.

#1) $f(x) = x^3 - 6x^2 + 9x + 10$ on [-1, 2]

#2) $f(x) = -x + 7$ on [0, 7]

#3) $f(x) = 4x^2 - x^3$ on [0, 6]

#4) $f(x) = x^3 - 12x$ on [-2, 2]

A: Find the absolute extreme values of each function on the interval given.

#5) $f(x) = x^4 + 2x^3 + 2x^2 - 1$ on [-2, 2]

#6) $f(x) = 2x^5 - 3x^4$ on [-1, 4]

#7) $f(x) = (x^2 - 1)^3$ on [-1, 1]

#8) $f(x) = \frac{x}{x^2+1}$ on [-4, 2]

Parasites

#9) George has a scorching case of parasites. The average parasite count living on him on day x of his unbathing season is $P(x) = 8x - 0.2x^2$ (for $0 < x < 40$). On which day is the parasite count the highest?

Moped (pronounced Moe Ped)

#10) The fuel economy (in miles per gallon) of George's Moped is $E(x) = -0.01x^2 + 0.62x + 10.4$, where x is the driving speed (in miles per hour, $20 \leq x \leq 60$). At what speed is fuel economy greatest?

Sentence Answer:

Sentence Answer:

Toxic Waste

#11) George's body is discharging toxic waste into a large lake, and the pollution level at a point x miles from George's disgustingness is $P(x) = 3x^2 - 72x + 576$ parts per million ($0 \leq x \leq 50$). Find where the pollution is the least.

Cabbage Patch

#12) George was finally able to sell his vintage, extremely used Cabbage Patch Doll on Ebay for the high price of 14 cents. To keep his profit margin as high as possible, George is making his own open top packing box from a square piece of cardboard with dimensions of 18 inches. (He plans to use toilet paper for the lid.) If George cuts the corners out of the cardboard, what are the dimensions and volume of the largest box that can be made this way?

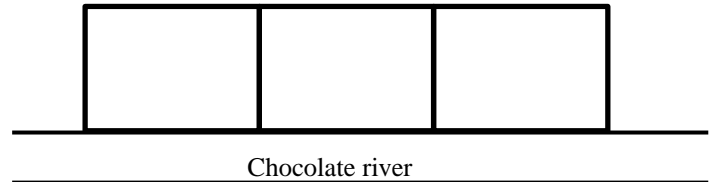*Sentence Answer:*

Sentence Answer:

Pocket Monster Pen

#13) George wants to build a Pokemon pen along the side of his bedroom wall using 800 inches of popsicle sticks. If the side of along the bedroom wall needs no popsicle sticks, what are the dimensions of the largest possible Pokemon pen?

Chocolate River

#14) George wants to make three identical rectangular enclosures along a chocolate river for his marshmallow farm, as in the diagram shown below. If he has 1200 inches of pretzel fence (and if the sides along the chocolate river needs no pretzels), what should be the dimensions of each enclosure if the total area is to be maximized?
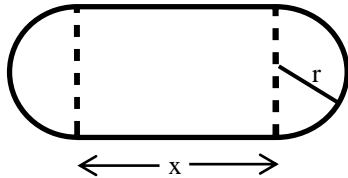
Chocolate river

Sentence Answer:
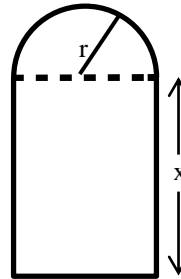
Sentence Answer:

Body Odor

#15) George's B.O. medicine comes in a capsule consisting of a rectangle with a semicircle at each end as shown below. If the perimeter is exactly 440 centimeters, find the dimensions (x and r) that maximize the area of the **rectangle**.

Window

#16) George's bedroom window consists of a rectangle topped by a semicircle, as show below. If the perimeter is to be 18 feet, find the dimensions (x and r) that maximize the area of the window.

Sentence Answer:

Sentence Answer: