10.4 Modeling with Quadratics

Name:_____

Corrective Assignment

Directions: Use the given information to answer the questions. Whenever needed round to the HUNDREDTHS place. Sketch the situation.

Sully is building the softball team a rectangular batting cage. The area (in square feet) of the enclosure as a function of one side of the pen is modeled by: $A(x) = 30x - x^2$.

1) What is the maximum area of the batting cage?

2) What is the length of one side to achieve the maximum area?

3) How long would the sides of the cage be if the area were 200 ft^2?

The number of people who mountain bike (in millions of people) as a function of time (in years since 2010) can be modeled by the equation: $M(t) = 0.247t^2 - 2.265t + 13.962$.

4) How many mountain bikers in 2014 (4 years after 2010 so t=4)?

5) What year will there be no mountain bikers?

6) What is the minimum amount of mountain bikers?

7) What year will this minimum amount of riders occur?

8) What year will there be 30 million mountain bikers?

Mr. Bean throws Mr. Brust's calculator out the window. The height (in feet) of the calculator as a function of time (in seconds) is modeled by the function: $h(t) = -16t^2 + 52t + 250$

9) How long will it take the calculator to reach its maximum height?

10) What is the maximum height the calculator will reach?

11) What is the height that Mr. Bean was at when he threw the calculator?

12) When will the calculator hit the ground?

13) How long will it take for the calculator to be 50 feet off the ground

Mr. Kelly is RETIRING. He claims he can make more money by producing a high tech buzzer for students to let their teachers know they need help. He calculates that the cost to manufacture these buzzers (in $) as a function of the number of buzzers sold can be modeled by $C(b) = 0.15b^2 - 12b + 350$.

14) How much cost does Mr. Kelly start with before he produces even one buzzer?

15) How many buzzers does he need to produce if he wants to have his costs be $250?

16) What is the minimum cost of production?

17) How many buzzers would he need to produce to keep his costs at a minimum?

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Corrective Assignment Answers

1) 225 ft^2 2) 15 ft 3) 10 feet by 20 feet 4) 8.854 million mountain bikers 5) There will never be no mountain bikers. 6) 8.77 million mountain bikers 7) The minimum will occur in the year 2014. 8) Year 2023 there will be 30 million mountain bikers. 9) 1.62 seconds 10) 292.25 feet 11) 250 feet 12) 5.90 seconds 13)5.52 seconds. 14) $350 15) 9.45 (10) or 70.55 (71) buzzers 16) $110 17) 40 buzzers