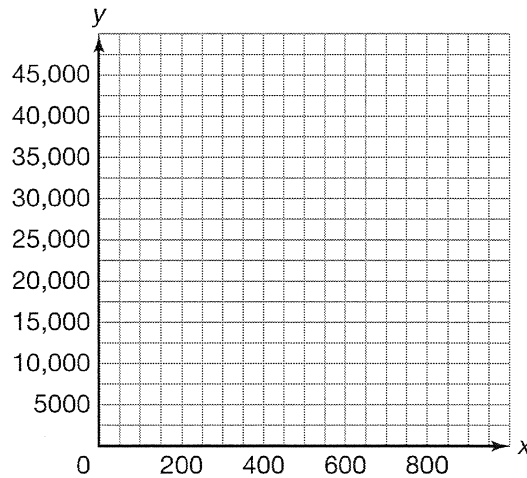


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Walking the . . . Curve?
Domain, Range, Zeros, and Intercepts

1. A masking tape company has to decide how many hundreds of rolls of tape to produce each day. The company knows that the costs to produce the tape go down the more rolls they make. However, the overall cost to the company increases if they make too many rolls due to the cost of storing overstock. The company determined that the cost to produce x hundreds of units a day could be represented by the function $f(x) = 0.04x^2 - 16x + 15,000$.
 - a. Graph the function. Sketch the graph and label the axes.



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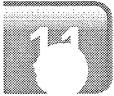
- b. What are the domain and range of the function in terms of the graph?
 - c. What are the domain and range of the function in terms of the problem situation?

- d. Over what interval does the cost of making the rolls of tape decrease? Increase?

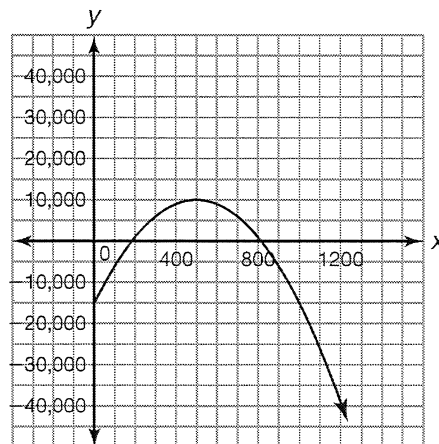
- e. How many rolls of tape should the company make to minimize the cost?

- f. What is the minimum cost to the company? What does this number represent for the function?

- g. Determine the x-intercept(s) of this function and describe what they mean in terms of the cost to the company.



2. The profit a masking tape company makes from producing and selling x hundred rolls of tape can be represented by the function $g(x) = -0.1x^2 + 100x - 15,000$. The graph of the profit function is shown.



- a. What is the domain of this function? What is the domain for the problem situation?

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- b. What is the range of this function? What is the range for the problem situation?
- c. Over what interval does the profit increase? Decrease?
- d. How many rolls of tape must they produce and sell to make a profit of \$1590?
- e. Determine the x -intercepts of the function. Describe what the x -intercepts mean in terms of this problem situation.
- f. Over what interval(s) is there a negative profit? Over what interval(s) is there a positive profit?