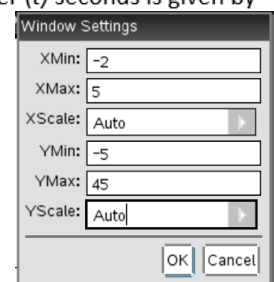
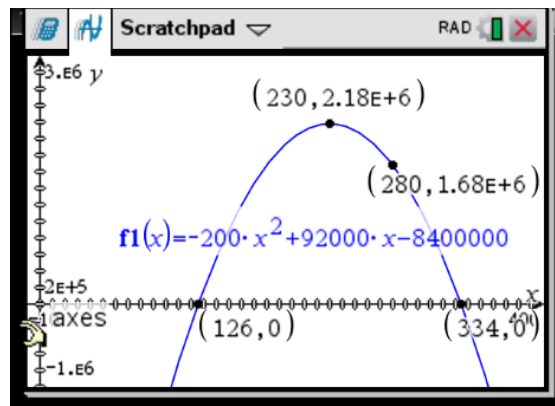
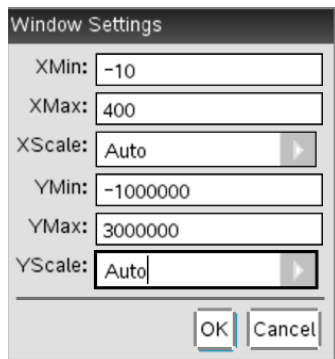


1. A ball is thrown into the air with an initial upward velocity of 48ft/s. Its height(h) in feet after (t) seconds is given by the function $h(t) = -16t^2 + 48t + 4$
 - a. Use a graphing calculator to draw the function, then label the vertex and zeroes.
 - b. What is the height of the ball after 2 seconds?
 - c. In how many seconds will the ball reach its maximum height?
 - d. What is the ball's maximum height?
 - e. After how many seconds will the ball hit the ground?





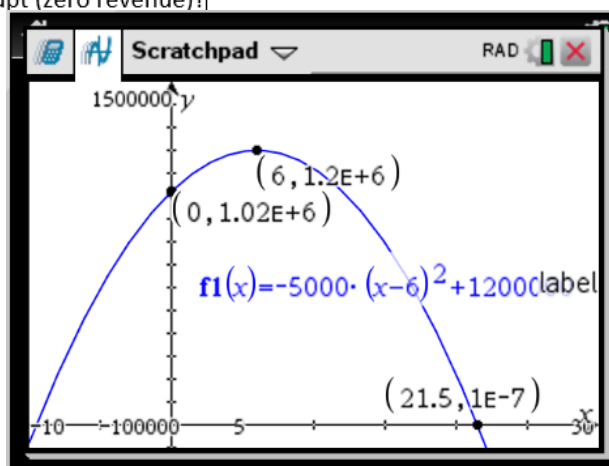
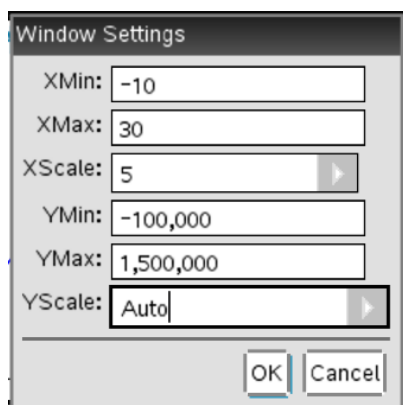
2. A new luxury headphone company is trying to decide how much to sell each pair. Based on sales projections minus the cost of production they have the following Profit (p) projection according to the cost(c) per headphone.

$$P(c) = -200c^2 + 92,000c - 8,400,000$$
 Obviously, if the price is too high they won't make any sales and profit will be zero, likewise if the price is too low they won't make back their investment.
 - a. What is the ideal price for the headphones to maximize profit?
 - b. What is the difference in revenue from the ideal price versus just \$50 more?
 - c. If they charge \$50 more than the ideal price, shouldn't they make more money? Explain why or why not?

3. Blood and Terror III, the newest hottest video game just hit the market. The company started with nothing, then sales sky rocketed! Sadly, just as quickly as they raked in all the mullah, sales dipped and their reign of terror was over. Their company Revenue(R) over time (t) in months, is mimicked by the parabolic equation.

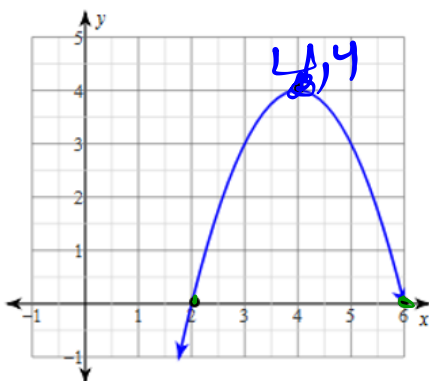
$$R(t) = -50000(t - 6)^2 + 1,200,000$$

- a. How much was their maximum revenue?
- b. When did they reach their max?
- c. How long did it take to go bankrupt (zero revenue)?

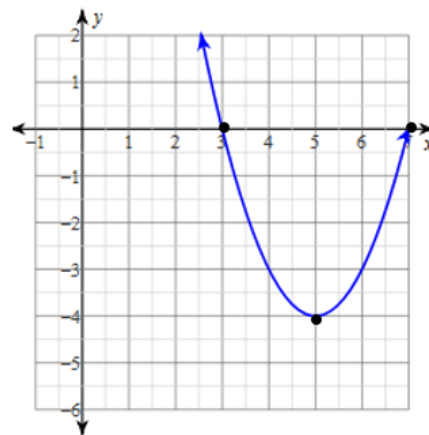


Vertex Form	Factored Form	Standard Form
$y = a(x - h)^2 + k$ Where $(h, k) = \text{vertex}$	$y = (x - f_1)(x - f_2)$ Where f_1 and f_2 are x-intercepts	$y = Ax^2 + bx + c$ Obtained by expanding other forms.

4. Write 3 equations for the following Graphs.

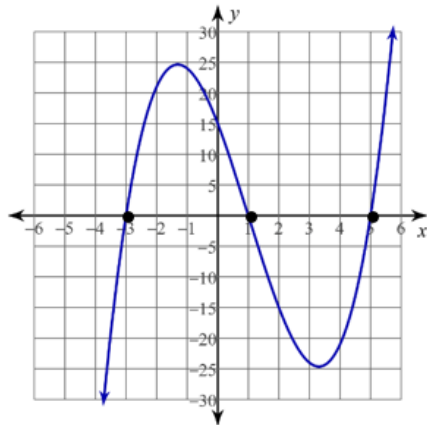


- a. Factored: $(x-2)(x-6)$
- b. Vertex: $(x-4)^2 + 4$
- c. Standard: $x^2 - 8x + 12$

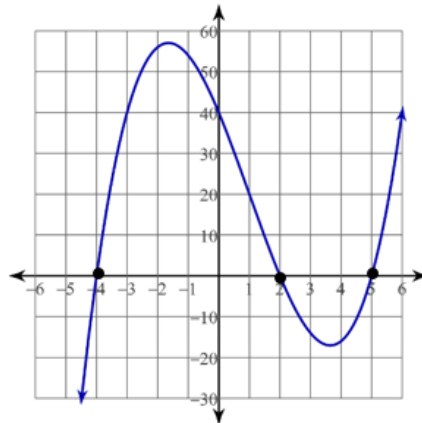


- Factored:
- Vertex:
- Standard:

5.



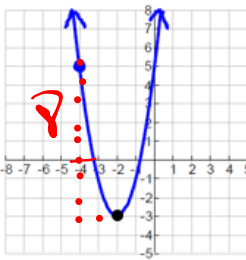
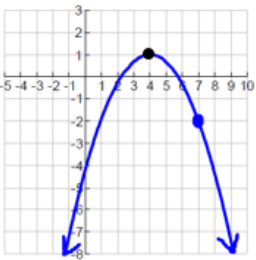
- a. Factored:
- b. Standard:



- A. Factored:
- B. Standard:

6.

Write a quadratic function (in vertex form) that models each graph.

<p>a.)</p>  <p style="color: red; margin-left: 20px;">Normal growth would be over 2, up 4. but this one is up 8. so it's 2 times as fast. so "a" is 2.</p> <p style="color: blue; font-size: 1.5em; margin-left: 20px;">$y = 2(x+2)^2 - 3$</p>	<p>b.)</p> 
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