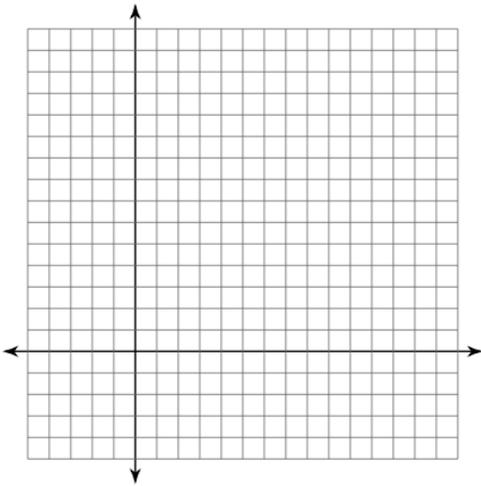


Secondary 2 Honors Graphing Quadratics Unit
Day 5 Homework - GRAPHING CALCULATOR REQUIRED!!!

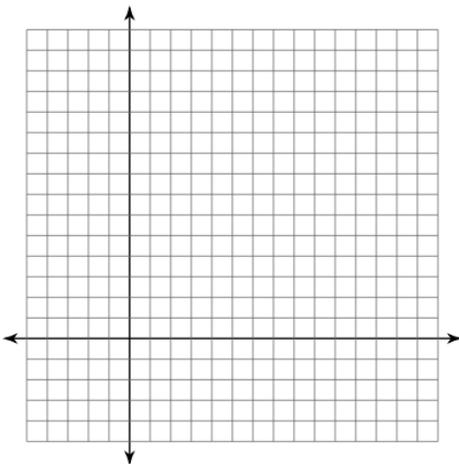
1. What does your graphing calculator call x-intercepts?
2. What does your graphing calculator call the vertex?
3. Where can you change the window on your calculator?
4. A ball is thrown straight up, from 3 m above the ground, with a velocity of 14 m/s. This situation can be modeled by the function $h(t) = -5t^2 + 14t + 3$, where h is the height of the ball in meters and t is the time in seconds. Graph this function below.



- a. What is a **REASONABLE** domain and range for this situation?
- b. When will the ball hit the ground?
- c. What will be the max height of the ball?

5. You have designed a new style of sports bicycle and you want to sell them to make a profit. How much should you sell them for? If they are too expensive people won't buy them, if you don't charge enough you won't make very much money. The equation that models this situation is $P(c) = -200c^2 + 92,000c - 8,400,000$, where P is the profit you will make and c is how much you charge for the bike. Graph the situation below.

HINT: Set window display to: xmin:-10; xmax: 500; ymin: -100,000; ymax: 2,500,000



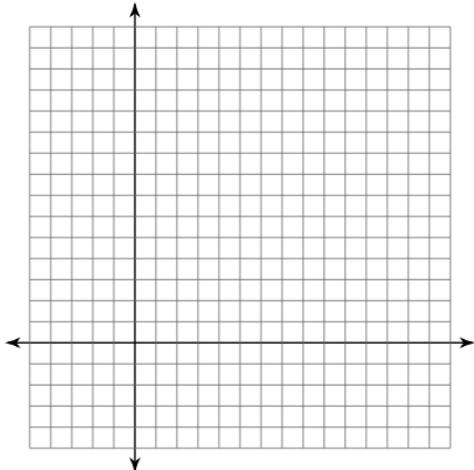
- a. What is a reasonable domain and range for this function?
- b. What is the best price to sell the bikes for?
- c. What profit will you make at the best price?

Secondary 2 Honors Graphing Quadratics Unit
Day 5 Homework - GRAPHING CALCULATOR REQUIRED!!!

6. Jason cliff dove off a cliff into the ocean in Acapulco while vacationing with his family. His height as a function of time could be modeled by the function $h(t) = -16t^2 + 16t + 48$, where t is the time in seconds and h is the height in feet.
- How long did it take for Jason to reach his maximum height?
 - What was the highest point that Jason reached?
 - Jason hit the water after how many seconds?
 - What is a reasonable domain and range for this situation?
7. You and a friend are hiking in the mountains. You want to climb to a ledge that is 20 feet above you. The height of the grappling hook you throw is given by the function $h(t) = -16t^2 + 32t + 5$.
- Can you throw the grappling hook high enough to reach the ledge? Why or why not?
 - What about the 25 foot ledge above that? Can you throw the grappling hook high enough to reach that ledge? Why or why not?
 - In the context of this problem, what does the 5 represent in the equation above?
8. You are trying to dunk a basketball. You need to jump 2.5 feet in the air to dunk the ball. The height that your feet are above the ground is given by the function $h(t) = -16t^2 + 12t$.
- What is a reasonable domain and range for this situation?
 - Will you be able to dunk the basketball? Why or why not?

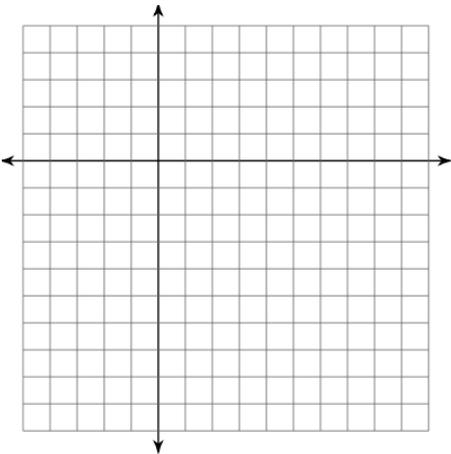
Secondary 2 Honors Graphing Quadratics Unit
 Day 5 Homework - GRAPHING CALCULATOR REQUIRED!!!

9. The profits of Mr. Unlucky's company can be represented by the equation $P(x) = -3x^2 + 18x - 4$, where P is the amount of profit in hundreds of dollars and x is the number of years of operation. He realizes his company is on the downturn and wishes to sell before he ends up in debt.



- When will Unlucky's business show the maximum profit?
- What is the maximum profit?
- When will it be too late to sell his business (when will he start losing money?)

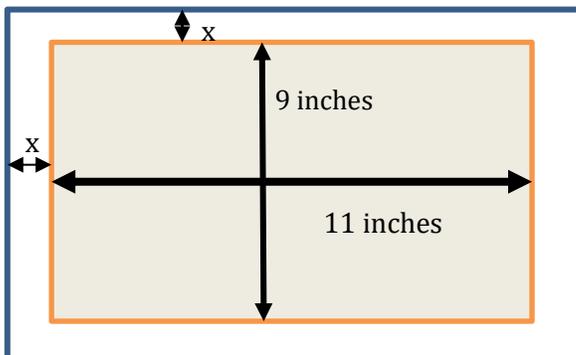
10. A duck dives down in the water to eat a fish that is 5.5 feet from the surface. The ducks path can be modeled by the equation $d(x) = 0.16x^2 - 1.6x$, where d is the ducks depth underwater and x is the horizontal distance during the dive. Graph this function below.



- What is a reasonable domain and range for this situation?
- Will the duck reach the fish? Why or why not?
- Will the duck reach another fish that is 3.5 from the surface? Why or why not?



11. A family portrait hanging on the wall has a picture in it with dimensions of 11 inches by 9 inches.



- If the width of the frame can be represented by x, give the quadratic equation that models this situation.
- If the width of the frame is 3 inches, what is the area of the entire picture (including the frame)?
- What is the area of just the frame?