

QUADRATIC HOMEWORK – HOMEWORK: SOLVING PROBLEMS BY GRAPHING QUADRATIC FUNCTIONS*

Kenny M. Felder

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Abstract

Some homework problems involving graphing quadratic functions.

Just as we did in class, we will start with our old friend

$$h(t) = h_o + v_o t - 16t^2.$$

Exercise 1

Michael Jordan jumps into the air at a spectacular 24 feet/second.

- Write the equation of motion for the flying Wizard.
- Put that equation into standard form for graphing, and draw the graph as before.
- How long does it take him to get back to the ground?
- At what time does His Airness reach his maximum height?
- What is that maximum height?

Exercise 2

Time to generalize! A ball is thrown upward from the ground with an initial velocity of v_o . At what time does it reach its maximum height, and what is that maximum height?

Some more problems from my Calculus books.

Exercise 3

Find the dimensions of a rectangle with perimeter 100 ft whose area is as large as possible. (Of course this is similar to the one we did in class, but without the river.)

Exercise 4

There are lots of **pairs of numbers** that add up to 10: for instance, $8 + 2$, or $9\frac{1}{2} + \frac{1}{2}$. Find the two that have the largest product possible.

Exercise 5

A pharmaceutical company makes a liquid form of penicillin. If they manufacture x units, they sell them for $200x$ dollars (in other words, they charge \$200 per unit). However, the total **cost** of manufacturing x units is $500,000 + 80x + 0 + 0.003x^2$. How many units should they manufacture to maximize their profits?

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