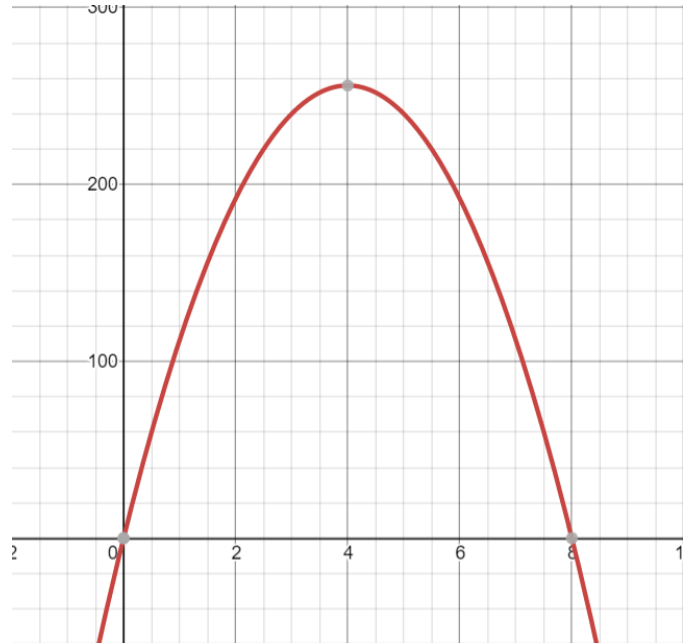# Applications with Quadratic Functions

The graph at the right shows the height, *h(t),* in feet of a small rocket, *t* seconds after it launched. The path of the rocket is given by the equation:

$$h(t) = -16t^2 + 128t$$

1. What is the quadratic term? _____

2. What does the quadratic term represent?

3. What is the linear term? _____

4. What does the linear term tell us?

5. What is the constant? _____

6. What does the constant tell us?

7. What ordered pair represents when the rocket hits the ground? _____

8. How long is the rocket in the air? _____ Explain how you got your answer.

9. Using the graph, estimate the greatest height the rocket reaches . _____
   Where did you find this information? (Be specific)

10. Using the graph, estimate how long it took the rocket to get to the greatest height. _____
    Where did you find this information? (Be specific)

11. Using the equation, calculate the greatest height the rocket reaches **AND** the time it took to get there.

12. Estimate how high the rocket is after 1 second. _____

13. Using the equation, calculate the exact value of the height of the rocket at 1 second.

14. After 2 seconds:
    a. Estimate how high the rocket is.

    b. Is the rocket going up or going down?

    c. Using the equation, calculate the exact value of the height of the rocket at 2 seconds.

15. After 6 seconds,
    a. Estimate how high the rocket is.

    b. Is the rocket going up or going down?

    c. Using the eqution, calculate the exact value of the height of the rocket at 6 seconds.

16. Do you think the rocket is traveling faster from 0 to 1 second or from 3 to 4 seconds. Explain your answer.