Agenda:

1) Quad Application- Projectile!

Homework: Worksheet 1(b) Introduction to Word Problems

518 Quadratic Applications

On a forward somersault dive, Greg's height h meters above the water is given approximately by $h = -5t^2 + 6t + 3$, where t is the time in seconds after he leaves the board.

Sketch:

a. What does the y-intercept represent in this problem?

b. How high above the pool is the diving board?

c. When does Greg reach his maximum height ?

d. How high does Greg dive?

e. What part of the graph gives you your answers to part d and e?

f. What part of the graph represents Greg's entry into the water?

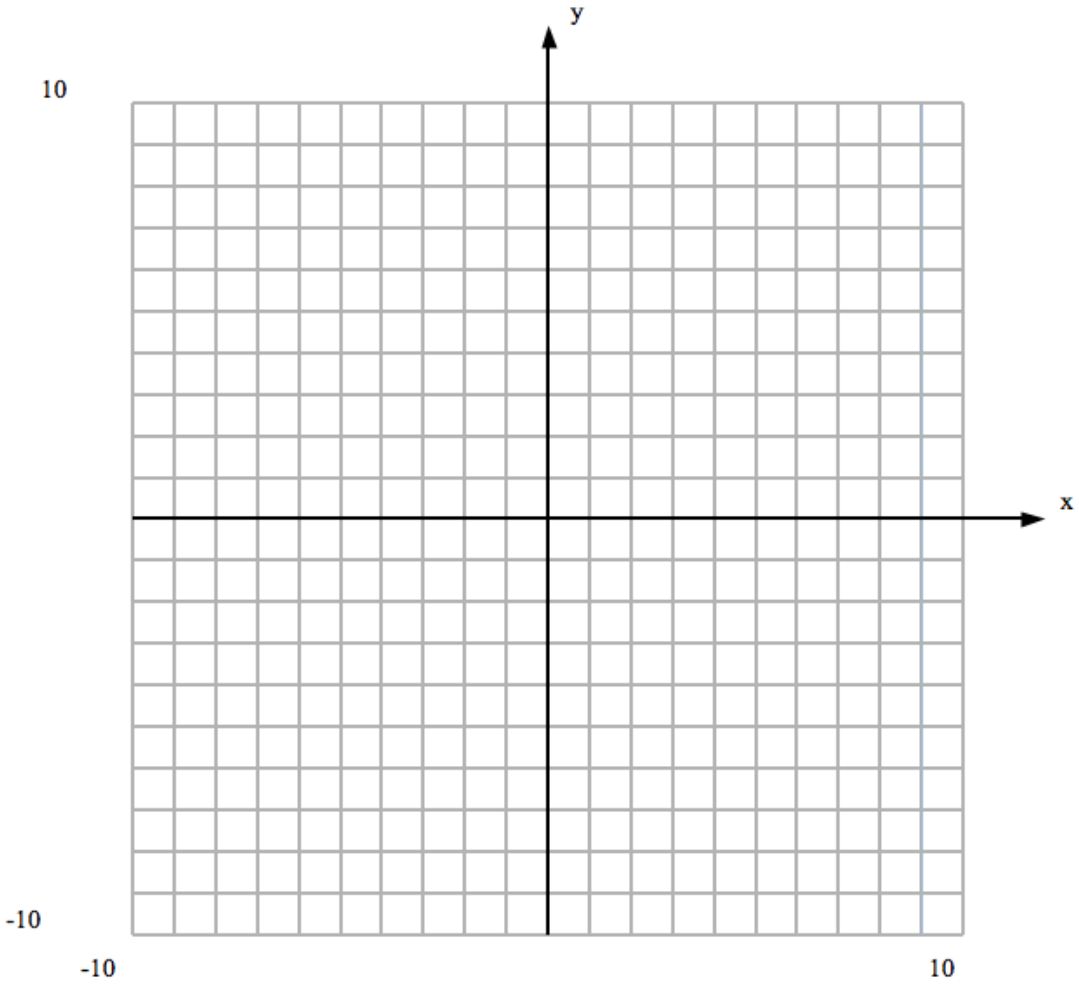
g. How long after beginning his dive did Greg hit the water?

h. How high above the water is Greg after 1 second?

i. How many seconds into the dive is Greg 3.5 meters above the water?

j. Where is Greg 1.7 seconds after diving?

k. On the next page, graph the equation on the grid provided. Label the x-axis and the y-axis and identify the vertex and roots. Clearly identify any scale changes.



m. Identify a reasonable domain and range for this problem.

Homework:

Worksheet 1(b)

Introduction to word problems **Name** _____

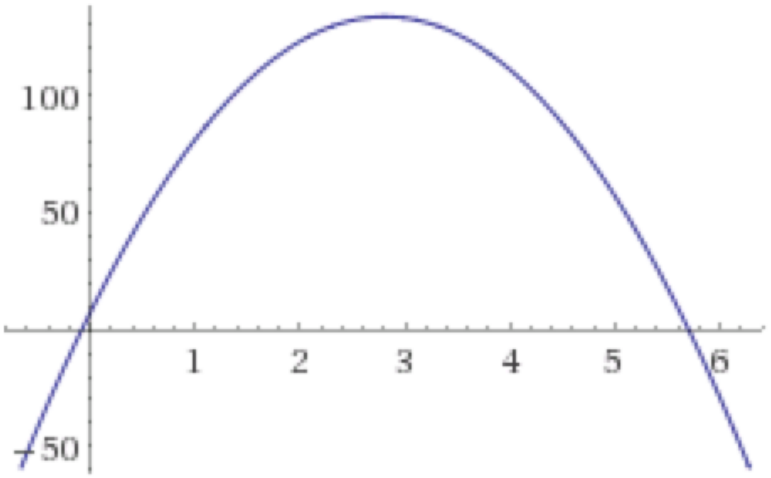
Interpretation of a quadratic graph projectile word problem

A lacrosse player releases the ball from a height of 7 feet, at an initial velocity of 90 ft per sec. The arc of the ball is described by the equation

$$h(x) = -16t^2 + 90x + 7$$

Where t is the time in seconds since the release of the ball. h(x) is the height of the ball at different times along its path.

Use the graph drawn for you to answer the questions that follow.



Use the graph to answer the questions below. You may need to estimate some answers. Don't forget to include units!

a. What is the maximum height of the ball?

_____

b. How many seconds elapse (after the ball is released) until the ball reaches its maximum height? _____

c. Where is the information for answering questions "a" and "b" found on the graph?

_____

d. How high is the ball after 1 sec? _____

When else does the ball have that height?

_____

Why are there two answers to question "d" found on the graph?

e. When is the ball 75 feet in the air? _____ _____
Why are there 2 answers?

g. For what times is the ball **more than** 75 feet in the air? _____

h. At what time does the ball hit the ground? _____

f. What is an appropriate "real world" domain for this problem? _____

g. What is an appropriate "real world" range for this problem? _____

2. Now suppose that the graph had not been drawn for you. Suppose that you need to find the information on your graphing calculator.

a. Given the equation $h(x) = -16x^2 + 90x + 7$, find the vertex: _____

b. Identify your window below:

X_{min} = _____ X_{max} = _____ X_{scl} = _____

Y_{min} = _____ Y_{max} = _____ Y_{scl} = _____