How to Maximize Your Partial Credit

The key to getting maximum credit on your work is to make sure that you make it easy for me to figure out what you have done. I can only do that if you present your ideas in a readable, logical, and understandable way. When writing your answers, you will increase your chances of getting partial credit if you:

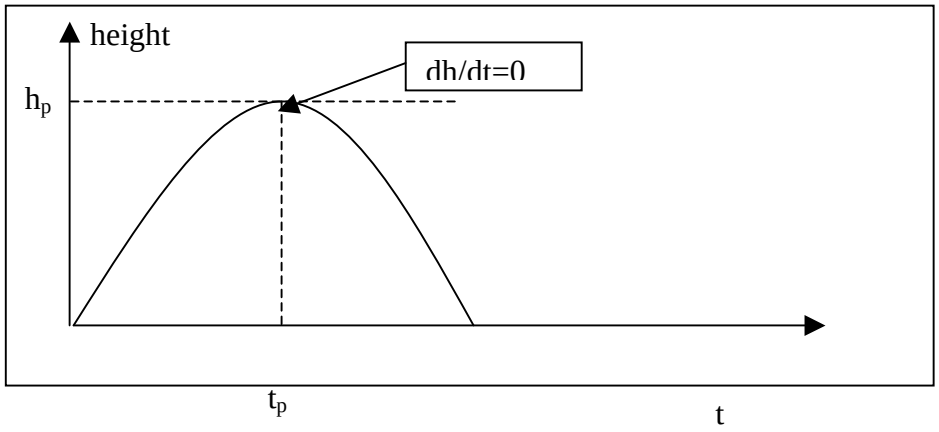
1. Use drawings and diagrams to explain what you are doing (these don't have to be elaborate – hand-drawn sketches are fine)
2. Write legibly (if I can't read it I can't grade it)
3. Clearly state your assumptions.
4. Indicate why you are doing something
    a. Tell ***what*** you are doing and ***why*** you are doing it!
    b. E.g., before you take the derivative of something, state ***why*** you are taking the derivative
5. **Use words to transition between your equations** (believe it or not, a string of equations left unbroken by commentary is virtually impossible to decipher – try blacking out all the words in your text book and read only the equations to see what I mean!)
    a. If you only write down equations you will get very little credit!!
6. Use words to define symbols that are used.
7. Before you begin your detailed development, provide a brief overview or plan of what you are going to do.
8. At the end of your development, ***comment*** on what the result tells you. ***This*** is what engineering is all about!!!

Here's an example:

Problem: Find the maximum height of a projectile following a parabolic trajectory.

***Well-Written* Solution**:

Plan: Find an expression for the trajectory height vs. time. Peak occurs when derivative is zero, so differentiate trajectory and set equal to zero. Solve resulting equation for time value to find the location of the peak, tp. Substitute time value into trajectory expression to find the maximum height, hp.



Details: A general parabolic trajectory is given by:

$h(t) = at^2 + bt + c$

Since the peak occurs when the derivative is zero we differentiate h(t) with respect to time to give:

$dh/dt = 2at + b$

Now, setting this to zero gives:

$dh/dt = 0$ gives $2at_p + b = 0$ (Note that t_p is used here, not t)

Now solving for the value of t that solves this gives:

$t_p = -b/2a$

Notice that a larger "b" gives a later peak & a smaller "a" gives a later peak. Notice also that the case when the trajectory starts at t=0 and the peak is at some positive time (i.e., $t_p>0$) requires that $b<0$ is negative and that $a>0$.

***Poorly-Written* Solution**:

Equation to work with is:
$h(t) = at^2 + bt + c$

$dh/dt = 2at + b$

$2at_p + b = 0$

$t_p = -b/2a$