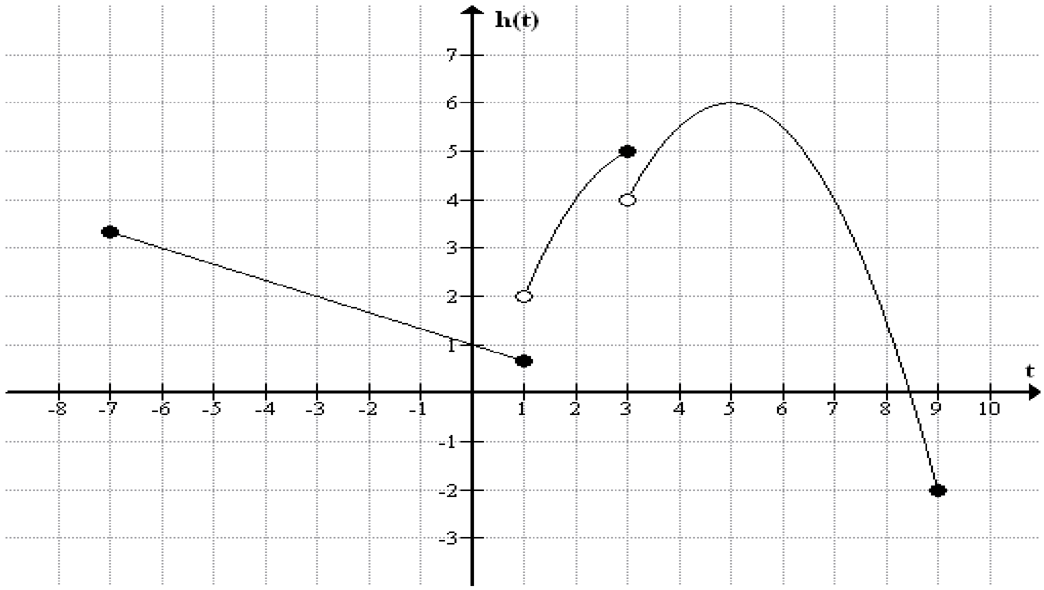
PAPA2: Characteristics of Piecewise Functions (LTF-79) Name ________________________ Date ________ Pd __

Use the graph of the piecewise function, *h(t)* to answer the following questions.



1. Find the value of *t* where *h(t)* = 4. _______________

2. Find *h(3).* _____________

3. Find the coordinates(s), if any, where *h(t)* has an absolute maximum value. _______________

4. State the intervals of x where *h(t)* is

   a. Increasing. __________________

   b. Decreasing. __________________

5. A. State the domain in interval notation. ____________________

   B. State the range in interval notation. ____________________

   C. At what values of *t* is *h* discontinuous? ____________________

6. A. What is the absolute minimum value for *h(t)*? __________________

   B. At what value of t does the absolute minimum value occur for $f(t) = h(t+2)$?_________________

   C. What is the absolute minimum value for $q(t) = h(t) + 2$? _________________

7. A. The portion of the graph on the interval [-7,1] is linear; write the equation for this portion of the function. ____________________

B. The portion of the graph on the interval (3,9] is parabolic; write the equation for this portion of the function. ____________________

C. The equation of the graph on the interval (1,3] is $y=-\frac{1}{2}x^2+\frac{7}{2}x-1$.

Combine the equations to form one piecewise rule for *h(t).*

$$h(t)=\begin{cases} \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, & \_\_\_\_\_\_\_\_\_\_ \\ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, & \_\_\_\_\_\_\_\_\_\_ \\ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, & \_\_\_\_\_\_\_\_\_\_ \end{cases}$$

8. State the interval(s) for which $h(t)<0$.

9. Keeping $h(0)=1$, translate the equations on (1,3] and on (3,9] to create a new function g(t) that will be **<u>continuous</u>** on [-7,9]

$$g(t)=\begin{cases} \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, & \_\_\_\_\_\_\_\_\_\_ \\ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, & \_\_\_\_\_\_\_\_\_\_ \\ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, & \_\_\_\_\_\_\_\_\_\_ \end{cases}$$