Derivatives

Name_____

Sydney is chasing George through the commons trying to get her phone back. Quentin, Sheedy, and Jeff decide to just watch and record data measuring Sydney's position with 0 being the doorway between the Commons and the pyramid, negative feet being inside the pyramid and positive feet being inside the Commons. They collect data over 10 seconds and get the following table:

t	Position (ft)
0	0
1	14
2	12
3	0
4	−16
5	−30
6	−36
7	−28
8	0
9	54
10	140

1) Find the equation for Sydney's position relative to the entrance to the Commons.

   $P(t) =$

2) What was Sydney's initial velocity?

3) At what times over those 10 seconds did Sydney change directions?

4) What was Sydney's position (or location) at the times that she changed directions?

5) What was the furthest she went into the Pyramid? When did this happen?

6) What was the furthest she went into the Commons? When did this happen?