**Function Applications – Height of a Ball**

Ben’s free throw follows a curved path. It goes up and then back down. The table below shows the height of the ball at several moments in time. The height of the ball ***h*** (in meters) at time ***t*** (in seconds) is given by the equation $h=-5t^{2}+10t+1$.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Independent variable:
2. Dependent variable:
3. Write the equation for this function:
4. Use function notation to express the function:
5. We can say \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is

a function of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.1. Find the height of Ben’s shot after 1.5 seconds. Use function notation.
2. Find the time it takes for Ben’s shot to be 6 meters above ground (from the graph).
3. What are the domain and range of this function?
4. Describe the shape of this graph. Use the Parent Function Reference Sheet.
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| --- | --- |
| **Time****(seconds)** | **Height (meters)** |
| 0 | 1 |
| .4 | 4.2 |
| .8 | 5.8 |
| 1.0 | 6 |
| 1.2 | 5.8 |
| 1.6 | 4.2 |
| 2.0 | 1 |

Graph the function on the axes below.  |
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