|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **First Names** | **Favorite Candy** | **Costume** |
|  |  | Amari | Francisca | Jamirea | Micaiah | Senad | M&Ms | Starbursts | Twix | Air Heads | Mounds | Chef | Banana | Ghost | Lumberjack | Pirate |
| **Time** | 5:45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6:00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6:30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6:45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7:00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Costume** | Chef |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Banana |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ghost |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lumberjack |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Pirate |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Favorite Candy** | M&Ms |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Starbursts |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Twix |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air Heads |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mounds |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Who’s Who on Halloween?

Amari, Francisca, Jamirea, Micaiah, and Senad live in the same neighborhood. On Halloween, they each go out trick-or-treating, but they each start at slightly different times, wear a different costume, and have different favorite candies they like to collect. For each derivative problem you solve, you’ll receive a clue from one of the neighbors about what they saw that night. Can you figure out who’s who on Halloween, including what time each person started trick-or-treating, what their favorite candy is, and what costume they were in?

1. The person whose favorite candy is Air Heads started trick-or-treating before Senad.
2. The 5 people are the person whose favorite candy is Air Heads, the pirate, Micaiah, the person who started trick-or-treating at 7 PM and the person whose favorite candy is Twix.
3. Of the chef and Senad, one started trick-or-treating at 5:45 PM and the other has Twix as their favorite candy.
4. Francisca started trick-or-treating at 5:45 PM.
5. Jamirea is either the ghost or the lumberjack.
6. The ghost started trick-or-treating after the banana.
7. The person whose favorite candy is M&Ms is neither the ghost nor the banana.
8. The person who started trick-or-treating at 6:30 has Starbursts as their favorite candy.
9. The person who started trick-or-treating at 6:45 was not the banana.
10. The banana started trick-or-treating after Senad.
11. The graph of is shown.

Evaluate

1. Find the derivative of each function.
2. The graph of is shown below for . For which value(s) of x is continuous but not differentiable?
3. Selected values of and their derivatives are given in the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| -3 | 10 | 1 | -1 | 3 |
| -1 | 4 | -2 | -3 | 0 |
| 2 | 1 | -5 | 0 | -2 |
| 5 | -2 | -3 | 2 | 8 |
| 8 | -5 | 11 | 7 | -3.5 |
| 11 | 5 | 8 | 13 | 1 |

Let . Find .

1. Let for some constants *k* and *m*. If and , find the values of *k* and *m*.
2. The graph of is shown below. Order the following from least=1 to greatest=4.



\_\_\_\_\_\_

\_\_\_\_\_\_\_ The average rate of change of on the interval [3,6]

\_\_\_\_\_\_\_

\_\_\_\_\_\_\_

1. Selected values of and their derivatives are given in the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| -3 | 10 | 1 | -1 | 3 |
| -1 | 4 | -2 | -3 | 0 |
| 2 | 1 | -5 | 0 | -2 |
| 5 | -2 | -3 | 2 | 8 |
| 8 | -5 | 11 | 7 | -3.5 |
| 11 | 5 | 8 | 13 | 1 |

Let . Find .

1. If , find
2. Selected values of and their derivatives are given in the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| -3 | 10 | 1 | -1 | 3 |
| -1 | 4 | -2 | -3 | 0 |
| 2 | 1 | -5 | 0 | -2 |
| 5 | -2 | -3 | 2 | 8 |
| 8 | -5 | 11 | 7 | -3.5 |
| 11 | 5 | 8 | 13 | 1 |

Let . Find .

1. Let and let be a function so that for all *x*.

If and , write an equation for .