Yesterday we learned investigated linear vs quadratic function



|  |  |  |  |
| --- | --- | --- | --- |
|  | Linear | Quadratic | Exponential |
| Equation  STANDARD Form | Y = mx + b  ax +by + c = 0 | Y = x2  y = ax2 + bx + c | Y = x3 |
| Degree | 1st degree | 2nd degree | 3rd degree |
| Differences | 1st differences all the same | 2nd differences all the same | Neither |
| Shape | Straight line | Symmetrical U shape | Curve |

Today’s job we’re going to look at the parabolic function using the standard form of the equation



y = ax2 + bx + c



You’re going to go through the activity either using graphing calculators or Desmos (via laptops or your electronic device). For each graph I want you to complete the following:

|  |  |  |  |
| --- | --- | --- | --- |
| Function | Table of Values | Same as y = x2 | Different than y = x2 |
| Parent Quadratic Function is  y = x2  a  b  c | |  |  | | --- | --- | | x | y | | -4 |  | | -3 |  | | -2 |  | | -1 |  | | 0 |  | | 1 |  | | 2 |  | | 3 |  | | 4 |  | |  |  |
| Y = 2x2  A  B  c |  |  |  |

With a partner, take 30 minutes to complete this type of table from above for the following functions:

|  |  |
| --- | --- |
| y = 2x2 | y = x2 - 4 |
| y = -2x2 | y = x2 + 5 |
| y = 5x2 | y = - x2 - 2 |
| y = -0.5x2 | y = x2 + 6 |
| y = 0.1x2 |  |

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If you have time, look to add a “b” value and try some out and see how it might affect your parabola for example y = x2 – 4x + 2 , keep your value of “a” and “c” the same every time though

So, what did you discover?



A pop fly in the Jays game last night followed the path defined by y = -5x2 + 20x + 1, where x is the time in seconds after the ball leaves the bat. Sketch what you think it might look like.

