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## Community Problem #4

## Quadratic Functions

Kayaking Southeast Alaskan waters is a popular activity. Suppose you are kayaking 3 miles up Katlian River and back. Suppose the round trip takes 3 hours. When you go upstream, against the current your speed is represented by  $x-1$  but when you go down stream your speed is represented by  $x+1$ . Use this information to write a quadratic function and graph to represent this information.

**Sample Work – Total distance = 3 miles up + 3 miles down = 6 miles**

**Total time = 3 hours**

**speed  $x$ , speed upstream =  $x-1$ , speed going downstream =  $x+1$**

$$3 = \frac{3}{(x-1)} + \frac{3}{(x+1)}$$

$$3 = \frac{6x}{(x-1)(x+1)}$$

$$3(x^2 - 1) = 6x$$

$$3x^2 - 3 = 6x$$

$$3x^2 - 6x - 3$$

| x  | y  |
|----|----|
| 1  | -6 |
| -1 | 6  |
| 0  | -3 |
| 2  | -3 |
| 3  | -6 |

