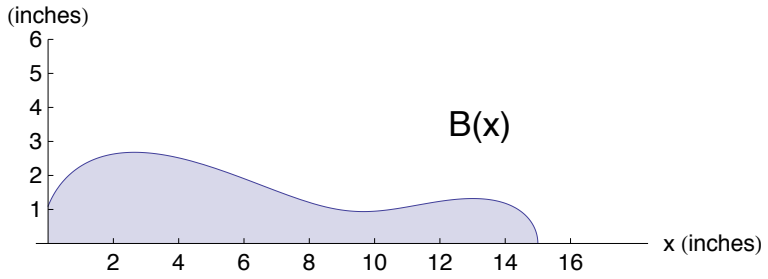
5. [11 points] During a friendly game of ten-pin bowling, your friends Walter and Smokey begin to quarrel over whether Smokey's toe slipped over the foul line. Meanwhile, you decide to pass the time by finding a mathematical model for the shape of a bowling pin. After some careful thought, you find that a fallen pin is a solid of revolution given by rotating the region under the curve

$$B(x) = \sqrt{1.2 + 5.32x - 1.485x^2 + .135x^3 - .004x^4}$$

over the interval $[0, 15]$ about the x-axis. The region is pictured below. All measurements are in inches. A helpful stranger in the bowling alley informs you that the wood used to make the pin has density $\delta = 17$ grams per cubic inch.



a. [3 points] Write a definite integral that gives the mass of the bowling pin. You do not need to evaluate this integral.

b. [6 points] What are the coordinates $(\bar{x}, \bar{y})$ of the bowling pin's center of mass? You may use your calculator to answer this question.

c. [2 points] Suppose the wood used to make the pin had density $\delta = 16$ grams per cubic inch. How does this affect the position $(\bar{x}, \bar{y})$ of the center of mass?