6. (10 points) A bellows\(^1\) has a triangular frame made of three rigid pieces. Two pieces, each 10 inches long, are hinged at the nozzle. They are attached to the third piece at points \(A\) and \(B\) which can slide, as shown in the diagrams below (the figure to the right shows a 3D sketch of the bellows; the figure to the left, a 2D sketch that may be specifically useful for solving the problem).

![Diagram of bellows](image)

Each piece of the frame is 2 inches wide, so the volume (in cubic inches) of air inside the bellows is equal to the area (in square inches) of the triangular cross-section shown above times the height of 2. Suppose you pump the bellows by moving \(A\) downward towards the center at a constant speed of 3 in/s. (So \(B\) also moves upwards at the same speed.) What is the rate at which air is being pumped out when \(A\) and \(B\) are 12 inches apart? (So \(A\) is 6 inches from the center of the vertical piece of the frame.)

\(^1\)A bellows is a device with a nozzle attached to a chamber; it is used to blow air out through the nozzle by reducing the volume of the chamber. In the bellows described here this is accomplished by moving the points \(A\) and \(B\) as indicated.