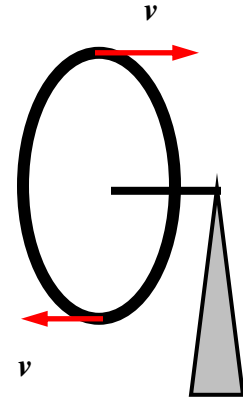


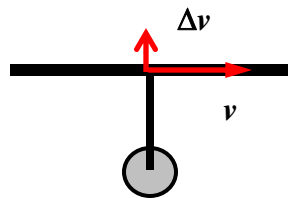
Rotation of a spinning bicycle wheel—without angular momentum
 Paul Zitzewitz, University of Michigan-Dearborn

Jeff Prentis (UM-D) first taught me this method.

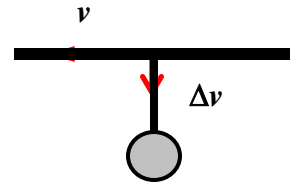
Consider a spinning wheel supported at one end of its axle:



Now look at the top of the wheel. The rim is moving to the right. But, the support of the wheel isn't under its center of mass, so the wheel tries to tip. This gives the top of the wheel a small velocity, Δv , outward, away from the support.



If you consider the bottom of the wheel, the velocity of the rim is in the opposite direction, but so is Δv , which is now inward, toward the support.



If you now add $\Delta v + v$, you obtain the resultant velocity vector. The rim at the top tends to move to the right and outward, the rim at the top to the left and inward. The only way this can be accomplished is for the wheel to rotate (precess) about its pivot point, as shown by the blue arrow.

