EXAMPLE: JUMPING INTO A MOVING DISC

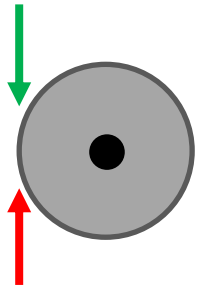
EXAMPLE**:** A 200 kg disc 4 m in radius spins around a perpendicular axis through its center at 2 rad/s counter-clockwise. Find the new speed the disc would have if an 80 kg person **(**treat as a point mass**):**

(a) Steps into the disc's edge with negligible speed**;**

(b) Jumps into the disc, at its edge, with 9 m/s, directed towards the center**;**

(c) Jumps into the disc's edge with 9 m/s, directed tangentially up, as shown in red**;**

(d) Jumps into the disc's edge with 9 m/s, directed tangentially down **(**green**);**



PRACTICE: JUMPING OUT OF A MOVING DISC

PRACTICE**:** A 200 kg disc 2 m in radius spins around a perpendicular axis through its center, with a person on it, at 3 rad/s counter-clockwise. The person has mass 70 kg, is at rest **(**relative to the disc, that is, spins with it**)** at the disc's edge, and can be treated as a point mass**.** If the person jumps tangentially out of the disc with 10 m/s **(**relative to the floor**)**, as shown by the red arrow, what new angular speed will the disc have as a result**?**

→ BONUS**:** If the person steps out into ice with negligible speed of his/her own, what speed would it have upon exiting**?**