

26. We use coordinates with $+x$ horizontally toward the pitcher and $+y$ upward. Angles are measured counterclockwise from the $+x$ axis. Mass, velocity and momentum units are SI. Thus, the initial momentum can be written $\vec{p}_0 = (4.5 \angle 215^\circ)$ in magnitude-angle notation.
- (a) In magnitude-angle notation, the momentum change is $(6.0 \angle -90^\circ) - (4.5 \angle 215^\circ) = (5.0 \angle -43^\circ)$ (efficiently done with a vector capable calculator in polar mode). The magnitude of the momentum change is therefore $5.0 \text{ kg}\cdot\text{m/s}$.
- (b) The momentum change is $(6.0 \angle 0^\circ) - (4.5 \angle 215^\circ) = (10 \angle 15^\circ)$. Thus, the magnitude of the momentum change is $10 \text{ kg}\cdot\text{m/s}$.