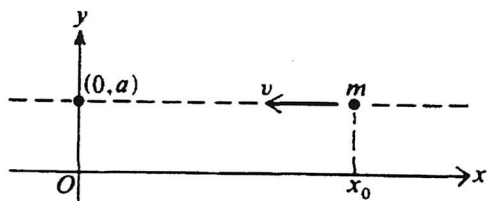


25. A particle moves in simple harmonic motion represented by the graph above. Which of the following represents the velocity of the particle as a function of time?

- (A) $v(t) = 4 \cos \pi t$
 (B) $v(t) = \pi \cos \pi t$
 (C) $v(t) = -\pi^2 \cos \pi t$
 (D) $v(t) = -4 \sin \pi t$
 (E) $v(t) = -4\pi \sin \pi t$



26. A particle of mass m moves with a constant speed v along the dashed line $y = a$. When the x -coordinate of the particle is x_0 , the magnitude of the angular momentum of the particle with respect to the origin of the system is

- (A) zero
 (B) mva
 (C) mx_0
 (D) $mv\sqrt{x_0^2 + a^2}$
 (E) $\frac{mva}{\sqrt{x_0^2 + a^2}}$

27. A uniform stick has length L . The moment of inertia about the center of the stick is I_0 . A particle of mass M is attached to one end of the stick. The moment of inertia of the combined system about the center of the stick is

- (A) $I_0 + \frac{1}{4} ML^2$
 (B) $I_0 + \frac{1}{2} ML^2$
 (C) $I_0 + \frac{3}{4} ML^2$
 (D) $I_0 + ML^2$
 (E) $I_0 + \frac{5}{4} ML^2$

28. A body moving in the positive x direction passes the origin at time $t = 0$. Between $t = 0$ and $t = 1$ second, the body has a constant speed of 24 meters per second. At $t = 1$ second, the body is given a constant acceleration of 6 meters per second squared in the negative x direction. The position x of the body at $t = 11$ seconds is

- (A) +99 m
 (B) +36 m
 (C) -36 m
 (D) -75 m
 (E) -99 m