

An object is released from rest at time  $t = 0$  and falls through the air, which exerts a resistive force such that the acceleration  $a$  of the object is given by  $a = g - bv$ , where  $v$  is the object's speed and  $b$  is a constant. If limiting cases for large and small values of  $t$  are considered, which of the following is a possible expression for the speed of the object as an explicit function of time?

(A)  $v = g(1 - e^{-bt})/b$

(B)  $v = (ge^{bt})/b$

(C)  $v = gt - bt^2$

(d)  $v = (g + a)t/b$

(e)  $v = v_0 + gt, v_0 \neq 0$

The Answer is A