

Kinematic Equation #2

Example 2 and 3

2) A motor bike travelling down the road slows down at  $2.0 \text{ m/s}^2$ . ( $t = 5 \text{ s}$ )  
 If it travels  $150 \text{ m}$  while slowing down, what was the initial velocity?

$v_i = ?$        $a = -2.0$        $v_f = ?$        $v_i = ?$   
 $d = 150 \text{ m}$

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$d = v_i t + \frac{1}{2} a t^2$        $t = 5.0 \text{ s}$   
 $v_i = \frac{d - \frac{1}{2} a t^2}{t} = \frac{(150 \text{ m}) - \frac{1}{2} (-2.0) (5)^2}{5.0} = \frac{175}{5} = +35 \text{ m/s}$

3) A car travelling at  $20.0 \text{ m/s}$  covers a distance of  $180.0 \text{ m}$  while speeding up for a time of  $6.0 \text{ s}$ .

What was the acceleration of the car and the final velocity?

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