

## Answer on Question #61161 – Math – Calculus

### Question

The position of an object at time  $t$  is given by  $s(t) = -9 - 3t$ . Find the instantaneous velocity at  $t=8$  by finding the derivative.

### Solution

The derivative of the linear function  $ax+b$  with respect to  $x$  equals  $a$ .

Therefore the derivative of the given function  $s(t)$  equals  $-3$ :

$$s'(t) = (-9 - 3t)' = -3.$$

As the instantaneous velocity  $v(t)$  equals the derivative of the position function

$$v(t) = s'(t),$$

we get the constant value of the velocity at any moment of time  $t$ , in particular, at  $t=8$ :

$$v(8) = -3.$$

**Answer:**  $v(8) = -3$ .