Math 4 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**5-5 Learn Check** Date\_\_\_\_\_\_\_\_

*In this learning check you will be assessed on the following learning goals:*

I can use derivatives to find the velocity and acceleration of a moving object and solve problems involving particle motion

1. A particle moves on the *x-*axis (in units) such that its position at time *t* (in seconds) is given by

the function:



a. Determine the velocity & acceleration of the particle at time *t.*

b. For what values of *t* is the particle at rest?

c. For what values of *t* is the particle moving to the right?

d. For what values of *t* is the particle moving to the left?

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e. What is the total distance it has traveled after 6 seconds?

f. What is the velocity when the acceleration is zero? Explain what your answer means in context.

g. What is the maximum distance from the starting point reached by the particle? Use calculus to explain.

2. The distance of an object from its starting point is measured (in feet) by the equation  for any time *t* seconds on the interval 

1. At *t =* 13, is the projectile moving up or down? Use calculus to explain how you know.
2. At *t =* 13*,* is the projectile speeding up or slowing down? Use calculus to explain how you know.