Mech C kinematics 2



A cart travels along a one dimensional track and its velocity is pictured on the graph above. During the time intervals below, the velocity is given by the function listed.

t = 0 – 2 y = x2 + 2

t = 2 – 5 y = x + 4

t = 5 – 14 y = –2x + 19

Determine the displacement of the cart for each of the listed intervals and for the entire 14 seconds.

t = 0 – 2 = x3/3 + 2x │ 8/3 + 4 = 6.67 m

t = 2 – 5 = ½ x2 + 4x │ 25/2 + 20 = 32.5 m

t = 5 – 14 = – x2 + 19x │ (-196 + 266) – (– 25 + 95) = -70 = 70 = 0

Net = 39.2 m