Answer key

The method: Rates of change

The derivative is the rate of change: velocity is the derivative of position.

$s(t) = 2t^3 - 2t^2 - 8t + 7$ is a position. Velocity at $t = 4$ → 72

$v(t) = s'(t) = 6t^2 - 4t - 8$ velocity is the derivative of position

$v(4) = 6(4)^2 - 4(4) - 8 = 72$

Problems 1 and 2 worked out · Version 0A

$s(t) = t^3 + 9t^2 + 7t - 5$ is a position. Velocity at $t = 5$ → 172

$v(t) = s'(t) = 3t^2 + 18t + 7$ velocity is the derivative of position

$v(5) = 3(5)^2 + 18(5) + 7 = 172$

$s(t) = 3t^3 - 2t^2 + 5$ is a position. Velocity at $t = 2$ → 28

$v(t) = s'(t) = 9t^2 - 4t$ velocity is the derivative of position

$v(2) = 9(2)^2 - 4(2) = 28$

Rates of change · Version 0A

1) 172 2) 28 3) −2 4) 19 5) 267 6) 158
7) −16 8) 103 9) 52 10) 7 11) 11 12) −2
13) 92 14) −18 15) −44 16) 9 17) 13 18) −33