TOPIC
Engineering Mechanics (Statics and Dynamics)

QUESTION
A body is traveling in a straight line. The equation of motion is given by
\[ x(t) = 5t^3 + 3t^2 - 6t \]
where
- \( x \) is given in meters, and
- \( t \) is given in seconds.
The acceleration of the body in m/s\(^2\) at \( t = 5.25 \) seconds most nearly is
(A) 6.000
(B) 163.5
(C) 436.8
(D) 752.9

HINT
Acceleration \( = \frac{d^2 x}{dt^2} \).

So differentiate the expression of location \( x \), twice with respect to time to get the expression for acceleration. Then substitute \( t = 5.25 \) in the resulting expression.

ACKNOWLEDGEMENT
This question of the day was provided by the courtesy of Professor Autar Kaw of the University of South Florida from the book Fundamentals of Engineering Examination Sample Questions General Engineering.