

Mechanics Exam Questions List

- Solve the following equation for the two roots of x : $x^2 - 16 = 0$
 - $x = 2i, -2i$
 - $x = 4i, -4i$
 - $x = 4, -4$ (Answer)
 - $x = 2, -2$
- Solve the following equation for the two roots of x : $-x^2 + 5x = -6$
 - $x = 2, 3$
 - $x = -1, -5$
 - $x = -1, 6$ (Answer)
 - $x = -0.742, 6.74$
- A particle is moving along a straight line through a fluid medium such that its speed is measured as $v = (2t)$ m/s, where t is in seconds. If it is released from rest at $s = 0$, determine its positions and acceleration when $t = 3$ s.
 - $s = 9$ m, $a = 2$ m/s² (Answer)
 - $s = 2$ m, $a = 18$ m/s²
 - $s = 18$ m, $a = 2$ m/s²
 - $s = 2$ m, $a = 9$ m/s²
- A boat is traveling along a circular path having a radius of 20 m. Determine the magnitude of the boat's acceleration if at a given instant the boat's speed is $v = 5$ m/s and the rate of increase in speed is $\dot{v} = 2$ m/s².
 - $a = 2.00$ m/s²
 - $a = 2.36$ m/s² (Answer)
 - $a = 1.25$ m/s²
 - $a = 12.50$ m/s²
- A train travels along a horizontal circular curve that has a radius of 200 m. If the speed of the train is uniformly increased from 30 km/h to 45 km/h in 5 s, determine the magnitude of the acceleration at the instant the speed of the train is 40 km/h.
 - $a = 0.617$ m/s²
 - $a = 1.037$ m/s² (Answer)
 - $a = 1.451$ m/s²
 - $a = 0.833$ m/s²