

YOUR NAME: \_\_\_\_\_

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to **show all your work**. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. An object is moving on a vertical trajectory and its distance  $h(t)$  from the ground in meters as a function of time  $t$ , measured in seconds since the beginning of its motion, is given by the equation

$$h(t) = -0.4t^2 + 8t + 3.$$

- (a) At which height does the object start its motion?
- (b) What is the maximum height that the object attains?
- (c) How long does it take for the object to reach its maximum height?
- (d) When will the object hit the ground?
- (e) What is the average velocity of the object between the 7th and the 9th second of its motion?
- (f) At which times during its motion will the object be at a height from the ground equal to three quarters of its maximum height?