

# MA161 Quiz 9

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**Problem 9.1.** The equation for the motion of a particle is

$$s(t) = t^3 - 27t.$$

- (a) Find the velocity and acceleration of  $s$  as a function of  $t$ .
- (b) Find the velocity at  $t = 3$ .
- (c) Find the acceleration when the velocity is 0.

**Problem 9.2.** Differentiate the functions

$$(a) \ y = 6e^x + 8\sqrt[3]{x}.$$

$$(b) \ u = \sqrt[5]{t} + 6\sqrt{t^5}.$$

**Problem 9.3.** Find an equation of the tangent line to the curve  $y = x\sqrt{x}$  parallel to the line  $y = 9 + 3x$ .