(1) [7 points] Use the definition of the derivative to determine $g'(x)$ if $g(x) = \sqrt{2+3x}$.

(2) [3 points] Differentiate $z = \dfrac{A}{y^{10}} + B\cos y$ (here A and B are constants.)

(3) [5 points] The equation of motion of a particle is $s = t^3 - 3t$, where s is in meters and t in seconds. Determine the acceleration of the particle when the velocity is zero.