Question 1. Find the equation of the tangent line to the curve $y = \dfrac{3x - 2}{x^2 + 1}$ at the point corresponding to $x = -1$. *(3 points)*

Question 2. Using the rules for computing derivatives, compute the derivative of the given function. At each step, specify the formula/rule you applied. *(2 points each)*

(a) $g(t) = \cos(t^2 \cos(t) + \sin(t))$

(b) $f(x) = \sqrt[3]{(x+1)(3x+2)}$

Question 3. The equation of motion of a particle moving is given by $s = 2t^2 - 12t + 7$, where s is in meters and t is in seconds. *(1 point each)*

(a) Find the average velocity over the following time intervals: $[4, 5]$ and $[5, 6]$.

(b) Find the instantaneous velocity when $t = 5$ seconds.

(c) Find the acceleration when the velocity is 0 m/s.