Derivative Skills Review

2 POINTS EACH – NO PARTIAL CREDIT – NO CALCULATORS

1. Let \( f(t) = \frac{\ln(t)}{t^2+1} \). Compute \( f'(t) \).

2. Find \( \frac{dy}{dx} \) if \( y = \sqrt{\sin(2x)} \)

3. Find the slope of the tangent line to the curve \( y = e^x \tan^{-1}(x) \) at the point \((0, 0)\).
4. Find the general form of the anti-derivative of the function $f(x) = 3e^x + \sec^2(x)$.

5. Suppose $g'(t) = 2t^3 + 3t + 5$ and $g(1) = 5$. Find a formula for $g(t)$. 