Show all work.

1. **(4 points)** Find the equation of the tangent line to the curve $y = \sqrt{x^3 - 2x + 5}$ at the point $(2, 3)$.

2. **(8 points)** Determine a formula for $\frac{dy}{dx}$ by implicitly differentiating $\frac{x^2}{x+y} = y^3 - x$.

3. **(8 points)** Calculate the following derivatives.

   (a) For $f(t) = 6t^2 \arcsin(t)$, find $f'(t)$.

   (b) Calculate $\frac{d}{dq} \arctan(3q + 1)$.

   (c) Calculate $\frac{d}{dx} \frac{\sin x}{\ln(x)}$.