

QUIZ 6

1. (3 points) Find the derivative of $f(x) = x^{\sqrt{x}}$.

2. (3 points) Find the **unit** tangent vector to the parametric curve $x(t) = \sin(t) + 3t$, $y(t) = t - \sec(t)$ when $t = 0$.

3. (4 points) A sailboat is sailing along a canal. The sailboat moves only when the wind is blowing and its position is given by $s(t) = t^3 - 12t^2 + 180$, for $t \geq 0$. Determine when the wind has died down. When will the boat sail in the backward direction? ($s(t)$ is in meters and t is in minutes.)