King Fahd University of Petroleum and Minerals

MATH 201 QUIZ #1 Term 161

Name:	Serial:	ID:

Q1. Convert the curve $x = \sinh t$, $y = -\cosh t$ into Cartesian equations. Sketch the curve with the direction of the motion.

Q2 Consider the following parametric curve

$$x = \frac{1 - t^2}{1 + t^2}, \quad y = \frac{t(1 - t^2)}{1 + t^2}$$

(i) Find $\frac{dy}{dx}$.

(ii) Find the points on the parametric curve at which its tangent line is **horizontal**.

Q3 Find the volume of the solid of revolution when the cycloid

$x = R(\theta - \sin\theta)$, $y = R(1 - \cos\theta)$, $0 \leq \theta \leq 2\pi$.

is rotated about the **X-axis**.