

MATH 243: SECTION 10.2 GROUPWORK

- (1) Consider the curve given by the parametric equations

$$x = \frac{t}{1+t}$$
$$y = \frac{1+t}{t^2}$$

where $-\infty < t < \infty$. Calculate $\frac{dy}{dx}$. At what points, if any, is the curve's tangent vertical? What about horizontal?

- (2) Consider the curve given by the parametric equations

$$x = t^2 - 2t$$
$$y = \sqrt{t}$$

where $0 \leq t < \infty$. Calculate the area of the bounded region enclosed by this curve and the y axis.

- (3) Find the exact arc length of the curve given by the parametric equations

$$x = t \cos t$$
$$y = t \sin t$$

where $0 \leq t \leq \pi$.