## Izmir University of Economics, Department of Mathematics

## MATH 205 ANALYTIC GEOMETRY Quiz 6 Name Student No.

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1. The Witch of Agnesi curve is known by the parametric equation

$$x=at, \qquad y=\frac{a}{1+t^2}, \quad t\in (-\infty,\infty), \quad a \quad \text{ is a fixed constant}.$$

Find a point where the tangent line is horizontal.

2. The *cardioid* curve is given by

 $x = 2a\cos t - a\cos 2t$ ,  $y = 2a\sin t - a\sin 2t$ ,  $t \in [0, 2\pi]$ , a is a fixed constant.

Find the parametric form of the tangent line at  $t = \pi/2$ .

3. Find the slope of the curve at t = 1,

$$xt = \sqrt{5 - \sqrt{t}}, \qquad y(t - 1) = \ln y$$

if x and y are implicitly differentiable functions of t.