

Worksheet #1; date: 01/18/2018
MATH 53 Multivariable Calculus

1. (*Stewart 10.1.5*) Sketch the curve; indicate with an arrow the direction in which t increases; eliminate the parameter to find a Cartesian equation of the curve:

$$x = 2t - 1; \quad y = \frac{1}{2}t + 1.$$

2. (*Stewart 10.1.9*) Sketch the curve; indicate with an arrow the direction in which t increases; eliminate the parameter to find a Cartesian equation of the curve:

$$x = \sqrt{t}; \quad y = 1 - t.$$

3. (*Stewart 10.1.11*) Sketch the curve; indicate with an arrow the direction in which t increases; eliminate the parameter to find a Cartesian equation of the curve:

$$x = \sin \frac{1}{2}\theta; \quad y = \cos \frac{1}{2}\theta; \quad -\pi \leq \theta \leq \pi.$$

4. (*Stewart 10.1.21*) Describe the motion of a particle with position (x, y) as t varies in the given interval.

$$x = 5 \sin t; \quad y = 2 \cos t.$$

5. (*Stewart 10.1.37*) Compare the curves represented by the parametric equations. How do they differ?

(a) $x = t^3; \quad y = t^2;$

(b) $x = t^6; \quad y = t^4;$

(c) $x = e^{-3t}; \quad y = e^{-2t}.$