MATH 1700 ASSIGNMENT 5

THESE PROBLEMS ARE FROM TEXTBOOK "Calculus", James

Stewart 7th Edition

- page 651 10.2 Exercises: **11, 12, 13, 14, 15, 16**

11-16 Find dy/dx and d^2y/dx^2. For which values of t is the curve

concave upward?

11. $x = t^2 + 1$, $y = t^2 + t$

12. $x = t^3 - 12t$, $y = t^2 - 1$

13. $x = e^t$, $y = te^{-t}$

14. $x = t^2 + 1$, $y = e^t - 1$

15. $x = 2\sin t$, $y = 3\cos t$, $0 < t < 2\pi$

16. $x = \cos 2t$, $y = \cos t$, $0 < t < \pi$.

- page 651 10.2 Exercises: **17, 18, 19, 20**

(EXCLUDING to graph the curve)

17-20 Find the points on the curve where the tangent is horizontal or vertical.

17. $x = t^3 - 3t$, $y = t^2 - 3$

18. $x = t^3 - 3t$, $y = t^3 - 3t^2$

19. $x = \cos \theta$, $y = \cos 3\theta$

20. $x = e^{\sin \theta}$, $y = e^{\cos \theta}$.

- page 662 10.3 Exercises: **32, 34, 37, 38, 46**

Sketch the curve with the given polar equation by first sketching the graph of r as a function of θ in Cartesian coordinates.

32. $r = 1 + 2\cos\theta$

34. $r = \ln\theta$, $\theta \geq 1$

37. $r = 2\cos 4\theta$

38. $r = 3\cos 6\theta$

46. $r = 3 + 4\cos\theta$.

● page 669 10.4 Exercises: **45, 46, 47, 48**

45-48 Find the exact length of the polar curve.

45. $r = 2\cos\theta$, $0 \leq \theta \leq \pi$

46. $r = 5^\theta$, $0 \leq \theta \leq 2\pi$

47. $r = \theta^2$, $0 \leq \theta \leq 2\pi$

48. $r = 2(1 + \cos\theta)$