Calculus UTS midterm exam 2023, prepared by Michael Marchenko

1. Solve |k - Tx| < s. Classify shape Tx2 + mxy + Ly2 = 1.

2. Analyse exponential growth and decay.

3. Find logistic function P(t) for i = L+1 and R = t = M = L+2.

4. Find discriminant of y2=x3+Lx+T.Apply limit, derivative, integral.

5. Prove expression for derivative of x2 using limit, find $\left(sin(Tx)\right)'$

6. Find linear fit for (2, m2), (3, m3), (4, m4).

7. Find implicit function derivative Lx2 + Ty2 – k = 0.

8. Find inverse function derivative for Tx + L, curvature of Tx2+Lx.

9. Solve differential equations: y' = y, y' = Ty. Find T! and FT.

10. Find (a+b)L, $\sum\_{c=0}^{\infty }T^{-c}, $ $\sum\_{c=0}^{\infty }C(p,c)\left(Tx\right)^{c}$

11. Find $\sqrt[3]{27+1/T}$, error for T terms of Taylor series.

12. Expand sin(Tx) in Taylor Series, Tx in Fourier Series.