

QUIZ 6

(Math 200-Section B)

1. Find the Maclaurin polynomials P_0, P_1, P_2 for $f(x) = e^{2x} - 3x + 1$. (4 pts)
(Note: The Maclaurin polynomials are the Taylor polynomials at $x_0 = 0$)

2. Expand $f(x) = 2x^3 - 4x^2 + 3x + 1$ in powers of $(x - 1)$. What do you observe after the 3th derivative? Explain why is this necessary to happen. (4 pts)

3. Find the Taylor series of $f(x) = \frac{1}{x^2}$ at $x_0 = 1$. Make sure you include the n^{th} - term of the series. (4 pts)

4. Evaluate $\iint_R (x^{1/2} - y^2) dx dy$, where R is the region in the first quadrant bounded by the curves $y = x^2$ and $y = x^{1/4}$. (4 pts)
- (Recall: The graph of $y = x^{1/4}$ is similar to $y = x^{1/2} = \sqrt{x}$)

5. Find the volume of the region bounded above by the paraboloid $z = x^2 + y^2$ and below by the triangle enclosed by the lines $y = x$, $x = 0$ and $x + y = 2$ in the xy -plane. (4 pts)