MATH 2320 Test 2 Part 2

Name:_____

This is the second part of test 2. Please write clearly up answers to the questions. Show your **work**. A correct answer without correct work will not count.

Scan your work and email to instructor by 11:25am.

1. $\int \frac{6x^3+x^2+x}{x^4-1}\,dx$

2. Does the series converge or diverge? State the test you used, the criteria satisfied, the conclusion (converge or diverge) and show your work.

$$\sum_{k=1}^{\infty} \frac{k^2}{3^k}$$

3. Does the series converge or diverge? State the test you used, the criteria satisfied, the conclusion (converge or diverge) and show your work.

$$\sum_{k=1}^{\infty} \left[\frac{3k^2 + 3k + 1}{4k^2 + 1} \right]^k$$

4. Find the Taylor polynomial for $f(x) = \ln(x+3)$ for $n = 4$ at $x_0 = 0$. Estimate $\ln(3.01)$. Note $x = 0.01$ for this estimate.