MATH 2320 Test 2

Name:_____

1. $\int x \sin^{-2}(x^2+1)\,dx$

2. $\int x^2 \sin(x)\, dx$

3. $\int \sin^2(3x)\,dx$

4. $\int \sin^3(x)\,dx$

5. $\int \frac{1}{(1-x^2)^{3/2}}\,dx$

6. $\int_1^\infty \frac{1}{x^5}\,dx$

7. For the following Series state whether the series converges or diverges, the test you used, the criteria satisfied and show your work.

(a) $\sum_{k=1}^{\infty} \frac{1}{2k} - \frac{1}{2k+2}$

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

(c) $\displaystyle\sum_{k=1}^{\infty} \frac{k\sqrt{k^2+1}}{k^2+2k+11}$

(d) $\displaystyle\sum_{k=1}^{\infty} \frac{1}{k^{1/2}}$

(e) $\displaystyle\sum_{k=1}^{\infty} \frac{k}{2^k}$

(f) $\displaystyle\sum_{k=1}^{\infty} \frac{1}{k!}$