Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_

**9.9 Power Series II – Geometric Series**

No calculator unless specifically stated. ***Work problems on a separate sheet of paper.***

On problems 1-3, find the power series, centered at the given value of c. Give first 4 non-zero terms & the general form.

1. , c=0
2. , c=0
3. , c=0
4. Let *f* be the function given by and *G* be the function given by *G(x) =*
5. Find the first four non-zero terms & the general term for the power series expansion of *f(t)* about *t* = 0.
6. Find the first four non-zero terms & general term for the power series expansion of *G(t)* about *x* = 0.
7. Find the interval of convergence of the power series in part (b) Justify your answer (*for this problem, assume divergence at end points).*
8. The Maclaurin series for *f(x)* is given by 1+
9. Find *f ‘ (0)* and
10. For what values of *x* does the given series converge. Show your reasoning.
11. Let *g(x) = xf(x).* Write the Maclaurin series for *g(x)* in terms of a familiar function without using series. Then write *f(x)* in terms of the same familiar function.

For problems 6-9, state which Taylor series is represented, at what particular value of x, and find the sum of each convergent series (may use calculator ☺ )

1. 1+
2. 1
3. 1+
4. 1