Calculus Section 9.9 Geometric Power Series
-Find a geometric power series that represents a function.
-Construct a power series using series operations.

Homework: page 662 #’s 5, 7, 9, 11, 12, 35, 36

The final type of series involves functions written in the form: $\left(x\right)=\frac{1}{1-x}$ . These series resemble the sum of a Geometric series: . We can infer that the power series expansion of

$$f\left(x\right)=\frac{1}{1-x} is 1+x+x^{2}+x^{3}+…=\sum\_{n=0}^{\infty }1∙x^{n}$$

$$\sum\_{n=0}^{\infty }ar^{n}=a+ar+ar^{2}+…=\frac{a}{1-r}$$

**Examples) Find a Power Series and Interval of Convergence for Each Function**c = 0 c = 2

, c = 1

Find the power series representation of the Find the power series representation for
function $\left(x\right)=\frac{1}{(1-x)^{2}}$ . f(x) = arctan(x).