MA 16400 - Spring, 2014 Quiz 11, Series Formulas

1.
$$\frac{1}{1-x} = \sum_{n=0}^{\infty} x^n \qquad -1 < x < 1$$

2.
$$\frac{1}{(1-x)^2} = \sum_{n=0}^{\infty} (n+1)\, x^n = \sum_{n=1}^{\infty} n\, x^{n-1} \qquad -1 < x < 1$$

3.
$$\frac{1}{1+x} = \sum_{n=0}^{\infty} (-1)^n\, x^n \qquad -1 < x < 1$$

4.
$$\ln(1+x) = \sum_{n=1}^{\infty} (-1)^{n-1}\, \frac{x^n}{n} \qquad -1 < x < 1$$

5.
$$\frac{1}{1+x^2} = \sum_{n=0}^{\infty} (-1)^n\, x^{2n} \qquad -1 < x < 1$$

6.
$$\arctan(x) = \sum_{n=1}^{\infty} (-1)^{n+1}\, \frac{x^{2n+1}}{2n+1} \qquad -1 < x < 1$$

7.
$$e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!} \qquad -\infty < x < \infty$$

8.
$$\sin x = \sum_{n=0}^{\infty} \frac{(-1)^n\, x^{2n+1}}{(2n+1)!} \qquad -\infty < x < \infty$$

9.
$$\cos x = \sum_{n=0}^{\infty} \frac{(-1)^n\, x^{2n}}{(2n)!} \qquad -\infty < x < \infty$$