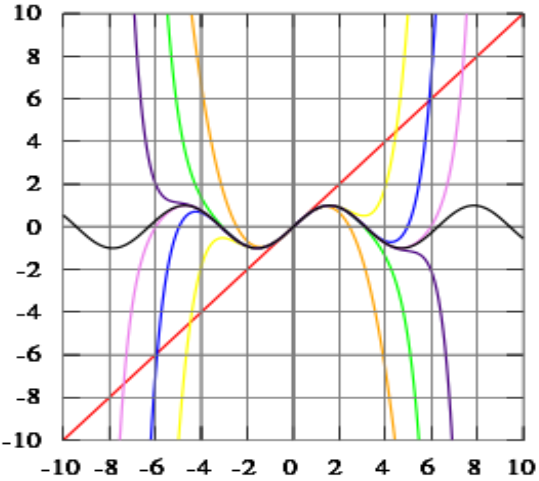


Harold's Taylor Series Cheat Sheet 22 October 2022

Power Series	
Power Series About Zero Geometric Series if	
Power Series	

Approximation Polynomial	
	

Maclaurin Series	
Maclaurin Series Taylor Series centered about	
Maclaurin Series Remainder	<div> <div></div> <div>where</div> <div></div> <div>and t</div> </div>

Taylor Series	
Taylor Series Maclaurin Series if	

Taylor Series Remainder	<div> <div></div> <div>where</div> <div></div> <div>and t</div> </div>
Summation Form	Expanded Form
Exponential Functions	
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<div> <div>t</div> <div></div> </div>	<div> <div>t</div> <div>t</div> <div>t</div> </div>

Natural Logarithms	
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Geometric Series	
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Double Factorial (!!)				
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Binomial Series	
$\frac{1}{1-x} = 1 + x + x^2 + x^3 + \dots$	$(1+x)^n = 1 + nx + \frac{n(n-1)}{2!}x^2 + \dots$

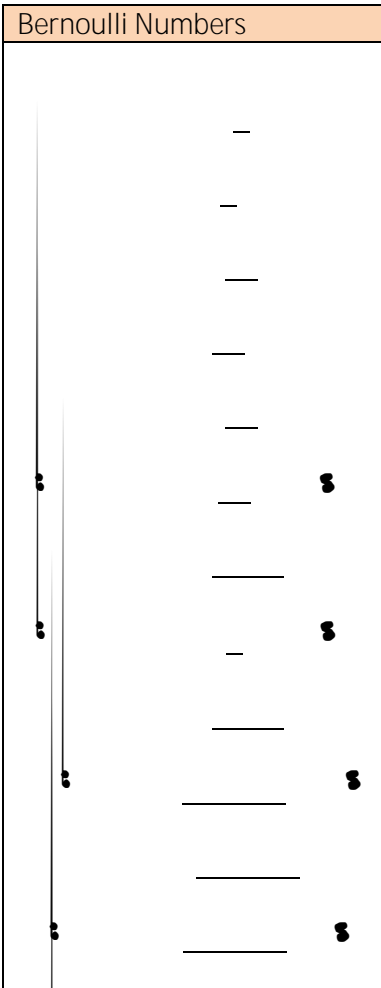
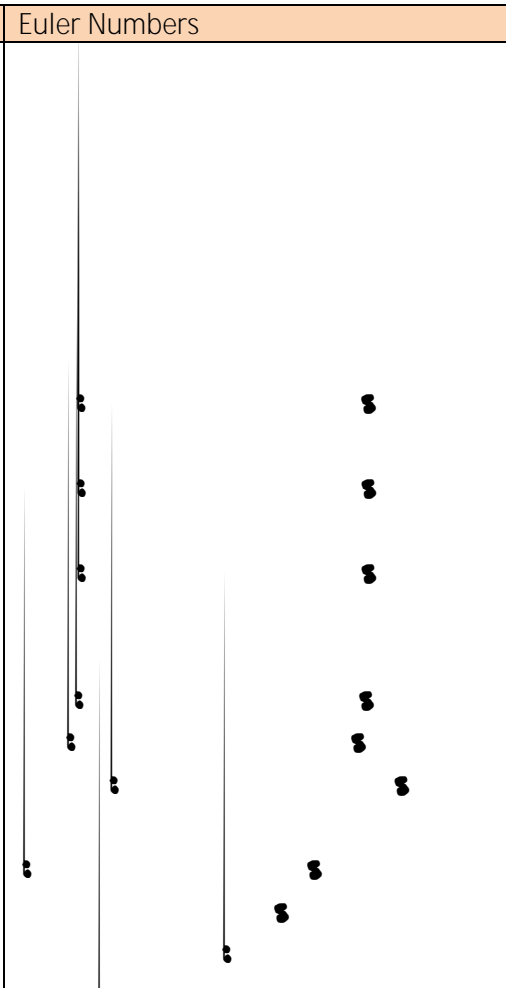
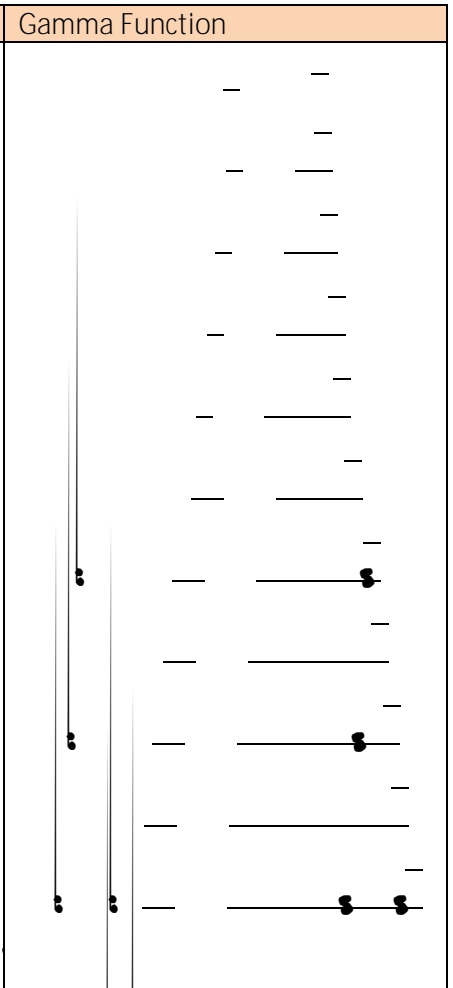
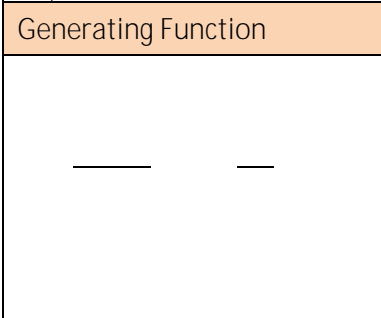
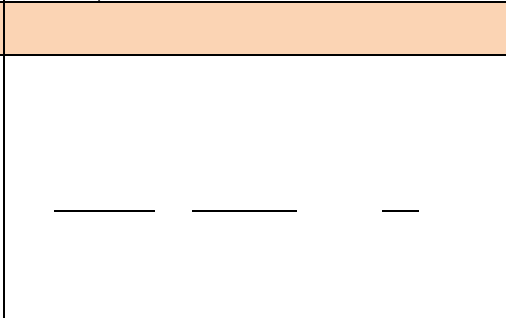
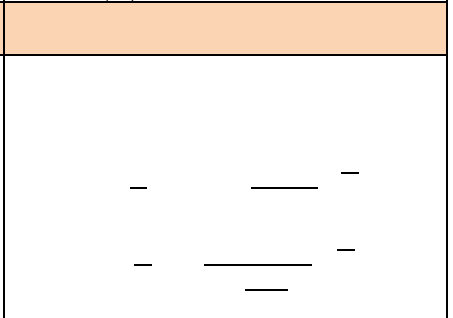
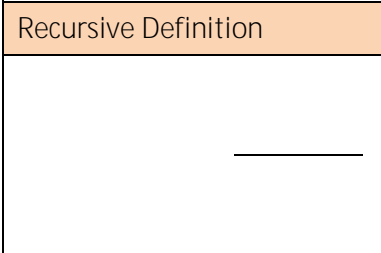
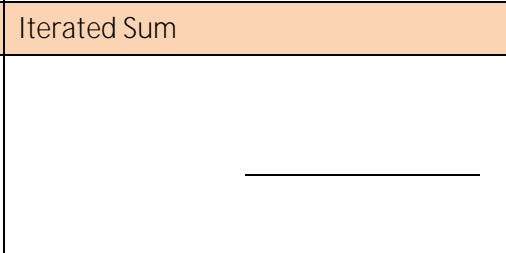
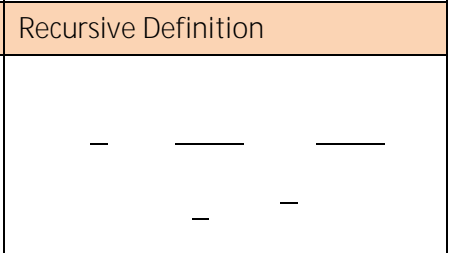
Trigonometric Functions	
$\sin(x) = \frac{y}{r}$	$\sin(x) = \cos\left(\frac{\pi}{2} - x\right)$
$\cos(x) = \frac{x}{r}$	$\cos(x) = \sin\left(\frac{\pi}{2} - x\right)$
$\tan(x) = \frac{y}{x}$	$\tan(x) = \frac{\sin(x)}{\cos(x)}$
$\cot(x) = \frac{x}{y}$	$\cot(x) = \frac{\cos(x)}{\sin(x)}$
$\sec(x) = \frac{r}{x}$	$\sec(x) = \frac{1}{\cos(x)}$
$\csc(x) = \frac{r}{y}$	$\csc(x) = \frac{1}{\sin(x)}$

Inverse Trigonometric Functions	
$\sin^{-1}\left(\frac{y}{r}\right) = x$	$\sin(x) = \frac{y}{r}$
$\cos^{-1}\left(\frac{x}{r}\right) = x$	$\cos(x) = \frac{x}{r}$
$\tan^{-1}\left(\frac{y}{x}\right) = x$	$\tan(x) = \frac{y}{x}$

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Hyperbolic Functions	
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m m	

Inverse Hyperbolic Functions	
$\frac{1}{x^2 - a^2} = \frac{1}{(x - a)(x + a)}$	$\frac{1}{x^2 - a^2} = \frac{A}{x - a} + \frac{B}{x + a}$
$1 = A(x + a) + B(x - a)$	$1 = Ax + Aa + Bx - Ba$
$1 = (A + B)x + (Aa - Ba)$	$0 = A + B$
$1 = Aa - Ba$	$1 = Aa - Ba$
$1 = Aa - Ba$	$1 = Aa - Ba$
$1 = Aa - Ba$	$1 = Aa - Ba$

Bernoulli Numbers	Euler Numbers	Gamma Function
		
Generating Function		
		
Recursive Definition	Iterated Sum	Recursive Definition
		

Sources:

- <https://www.wolframalpha.com>

- <https://en.wikipedia.org>
- <http://ddmf.msr-inria.inria.fr/1.9.1/ddmf>
- <http://web.mit.edu/kenta/www/three/taylor.html>