

Power Series	Functions as Power Series	Taylor & Maclaurin	Taylor Polynomials	Random
100 What are the two things to find when doing Power Series? <hr/> Interval of convergence & radius of convergence	100 Find the IoC: $g(x)=(x^3)/(1+x^7)$ <hr/> IoC: (-1,1)	100 What makes a Taylor series into a Maclaurin series? <hr/> When a=0	100 Consider the following function. $f(x)=1/x$, $a=1$, $n=2$, $0.7 \leq x \leq 1.3$ <hr/> Approximate f by a Taylor polynomial with degree n at the number a. <hr/> $f(x)=1-(x-1)+(x-1)^2$	100 What planet has the strongest gravity? <hr/> Jupiter
200 What is the primary test to find the radius of convergence? <hr/> Ratio Test	200 Find a power series representation: $g(x)=(x^3)/(1+x^7)$ <hr/> $\sum (-1)^n x^{7n+3}$ $n=0$ to ∞	200 Find the function represented by the given power series: $\sum (-1)^n (x^{8n})/(n!)$ <hr/> $e^x = \sum (x^n)/n!$ for all x		200 When Amazon started what was the only product they sold? <hr/> Books
300 Find the radius & interval of convergence $\sum (x^n/n4^n)$ $n=1$ to ∞ <hr/> RoC: 4 IoC: [-4,4)	300 Find the power series representation: $f(x)=6/(1+7x^4)$ <hr/> $\sum 6(-7)^n x^{4n}$ $n=0$ to ∞	300 Find the Taylor series for f centered at 5 if: $f^{(n)}(5)=((-1)^n n!)/(4^n(n+3))$ <hr/> $\sum ((-1)^n (x-5)^n)/(4^n(n+3))$	300 A car is moving with speed 50 m/s and acceleration 4 m/s ² at a given instant. Using a second-degree Taylor polynomial, estimate how far the car moves in the next second. <hr/> 52 m	300 What singer holds the most Grammy nominations? <hr/> Beyonce
400 Find the RoC & IoC. $\sum ((n+1)(x-2)^n)/(2n+1)!$ $n=0$ to ∞ <hr/> RoC: ∞ IoC: $(-\infty, \infty)$	400 Find the IoC: $f(x)=(3x^2)/(5-2\sqrt[3]{x})$ <hr/> $-125/8 < x < 125/8$	400 What is the radius of convergence R of the Taylor series? $f^{(n)}(5)=((-1)^n n!)/(4^n(n+3))$ <hr/> R=4		400 How long is a marathon? <hr/> 26.2 miles
500 Find the RoC & IoC: $\sum ((x-8)^n)/(n^4+1)$ $n=0$ to ∞ <hr/> RoC: 1 IoC: [7,9]	500 Find the power series representation: $f(x)=(3x^2)/(5-2\sqrt[3]{x})$ <hr/> $\sum (3/5)(2/5)^n x^{1/3n+2}$	500 Find the Maclaurin series: $f(x)=9(1-x)^{-2}$ <hr/> $9\sum (n+1)x^n$	500 Consider the following function $f(x)=\sin(x)$, $a=\pi/6$, $n=4$, $0 \leq x \leq \pi/3$ <hr/> Approximate f by a Taylor polynomial with degree n at the number a. <hr/> $1/2 + \sqrt{3}/2(x-\pi/6) - 1/4(x-\pi/6)^2 - \sqrt{3}/12(x-\pi/6)^3 + 1/48(x-\pi/6)^4$	500 What is the closest living relative to the T-Rex? <hr/> Chicken