# M 384: Assignment 5

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## Exercises 7.4.5 — Problem 2

*Problem.* If $f$ is analytic in a neighborhood of $x_0$ and $f(x_0) = 0$, show that $f(x)/(x - x_0)$ is analytic in the same neighborhood.

*Proof.*

□

## Exercises 7.4.5 — Problem 6

*Problem.* Prove that if $f(x)$ is analytic on $(a, b)$, then $F(x) = \int_c^x f(t)dt$ is also analytic on $(a, b)$, where $c$ is any point in $(a, b)$.

*Proof.*

□

## Exercises 7.4.5 — Problem 7

*Problem.* Compute the power-series expansion of the $f(x) = x^2/(1 - x^2)$ about $x = 0$.

*Proof.*

□

## Exercises 7.4.5 — Problem 8

*Problem.* Compute the radius of convergence of the following power series:

a. $\sum n^4/n!x^n$
b. $\sum \sqrt{n}x^n$
c. $\sum n^2 2^n x^n$

*Proof.*

□