Preface

Here are a set of problems for my Calculus I notes. These problems do not have any solutions available on this site. These are intended mostly for instructors who might want a set of problems to assign for turning in. I try to put up both practice problems (with solutions available) and these problems at the same time so that both will be available to anyone who wishes to use them.

Power Series and Functions

For problems 1 – 4 write the given function as a power series and give the interval of convergence.

1. \( f(x) = \frac{x}{1 - 8x} \)

2. \( f(x) = \frac{-12x^2}{1 + 6x^7} \)

3. \( f(x) = \frac{x^7}{8 + x^3} \)

4. \( f(x) = \frac{4\sqrt{x^2}}{4 - 3x^2} \)

For problems 5 & 6 give a power series representation for the derivative of the following function.

5. \( g(x) = \frac{x^{10}}{2 - x^2} \)

6. \( g(x) = \frac{9x^5}{1 + 3x^6} \)

For problems 7 & 8 give a power series representation for the integral of the following function.

7. \( h(x) = \frac{7x}{3 - 6x} \)

8. \( h(x) = \frac{x^4}{2 + x^9} \)