

Math 1312 — Worksheet # 2
Taylor Series

Find the Taylor series with center x_0 of the functions $f(x)$ below, and compute their radii of convergence.

1. $f(x) = \frac{1}{x+1} \quad x_0 = 0$

9. $f(x) = \frac{1}{\sqrt{x+1}} \quad x_0 = 2$

2. $f(x) = \frac{1}{x+4} \quad x_0 = 2$

10. $f(x) = \sqrt{x^2+4} \quad x_0 = 0$

3. $f(x) = \frac{1}{x^2+4} \quad x_0 = 0$

11. $f(x) = \sin(x^2) \quad x_0 = 0$

4. $f(x) = \frac{1}{x^2-2x+4} \quad x_0 = 1$

12. $f(x) = \arcsin(x) \quad x_0 = 0$

5. $f(x) = \frac{x-5}{x^3-1} \quad x_0 = 0$

13. $f(x) = \arctan(x^2) \quad x_0 = 0$

6. $f(x) = \cosh x \quad x_0 = 0$

14. $f(x) = x \arctan(x^2) \quad x_0 = 0$

7. $f(x) = \ln x \quad x_0 = 3$

15. $f(x) = \int e^{-x^2} dx \quad x_0 = 0$

8. $f(x) = \frac{1}{\sqrt{x+1}} \quad x_0 = 0$

16. $f(x) = \int \frac{\sin x}{x} dx \quad x_0 = 0$