12. In the Taylor series generated by $f(x) = x^{1/3}$ and centered at $a = 1$, the coefficient of $(x-1)^2$ is

a) $-\frac{1}{9}$ b) $\frac{1}{9}$ c) $-\frac{2}{9}$ d) $\frac{2}{9}$ e) $-\frac{1}{3}$ f) $\frac{1}{3}$

20. Let $F(x) = \int_0^x e^{-t^2} dt$. Which of the following is the beginning of the Maclaurin series for F?

(A) $x - \frac{x^3}{3} + \frac{x^5}{5} - \frac{x^7}{7} + \dots$

(B) $x - \frac{x^3}{3} + \frac{x^5}{10} - \frac{x^7}{42} + \dots$

(C) $x - \frac{x^2}{2} + \frac{x^4}{6} - \frac{x^6}{24} + \dots$

(D) $1 - \frac{x^2}{2} + \frac{x^4}{24} - \frac{x^6}{720} + \dots$

(E) $x - \frac{x^3}{3} + \frac{x^5}{15} - \frac{x^7}{105} + \dots$

(F) $x + \frac{x^3}{3} + \frac{x^5}{15} + \frac{x^7}{105} + \dots$

13. In the Maclaurin series of $\int \frac{e^{x^2}-1}{x}\,dx$, the coefficient of x^6 is

a) $\frac{1}{4}$ b) $\frac{1}{6}$ c) $\frac{1}{8}$ d) $\frac{1}{18}$ e) $\frac{1}{36}$ f) $\frac{1}{48}$

14. Let $f(x) = x^2 \ln(1+x)$. To the nearest 0.00001, the value of $f(0.1)$ is

a) 0.00090 b) 0.00092 c) 0.00094 d) 0.00095 e) 0.00098 f) 0.00100

2. Consider the power series

$$\sum_{n=1}^{\infty} \frac{(x-4)^n}{6^n\, n^{3/2}} \ .$$

(a) (2 points) What is the center (i.e. the point of expansion) for this series?

(b) (4 points) What is the radius of convergence of this series?

(c) (4 points) What is the interval of convergence for this series?