

1. (1 point) Write a Maclaurin series for:

$$(1 + x^2)^{-2}$$

2. (1 point) Let

$$f(x) = e^x - 3x^2$$

If we use the first two terms in the Maclaurin series to approximate $\sqrt{e} - \frac{3}{4}$, estimate the error in the approximation.

(turn over)

3. (1 point) Suppose m is a positive integer. Find a series $\sum_{n=0}^{\infty} a_n$ that represents:

$$\left(\frac{m+1}{m}\right)^{m\pi}.$$

This series should have infinitely many nonzero terms, a_n , and \ln (the natural logarithm) should not appear in any of the terms.