1.) Use any method (repeated differentiation method or short cuts using well known Maclaurin series) to find the first four nonzero terms of the Taylor series centered at $c$ for each of the following functions.

a.) $f(x) = x^2 + 3 + \sin(x^2)$ and $c = 0$

b.) $f(x) = e^{-x} - \cos(\sqrt{x})$ and $c = 0$

c.) $f(x) = x^3 \cos(2x)$ and $c = 0$

d.) $f(x) = (1 + x + x^2) \cdot \ln(1 + x)$ and $c = 0$

e.) $f(x) = \frac{x^5}{1 - 2x^3}$ and $c = 0$

f.) $f(x) = x + \sqrt{x + 4}$ and $c = -3$

g.) $f(x) = \tan(\pi x/4)$ and $c = 1$

2.) Determine the common function represented by (equal to) each of the following Taylor series.

a.) $1 + x + x^2/2! + x^3/3! + x^4/4! + \cdots$

b.) $x^2 + x^3 + x^4/2! + x^5/3! + x^6/4! + \cdots$

c.) $1 + x + x^2 + x^3 + x^4 + x^5 + \cdots$

d.) $x^4 - x^6 + x^8 - x^{10} + x^{12} - \cdots$