

Calculus

Homework #4

Review

due Thursday 9/27/2012 at 2:30pm

① For $|x| < 1$, show $x + 2^2x^2 + 3^2x^3 + 4^2x^4 + \dots = \frac{x(1+x)}{(1-x)^3}$

② Evaluate (i) $1 + (1/4) + (1/4)^2 + (1/4)^3 + \dots$

(ii) $(1/4) + 2(1/4)^2 + 3(1/4)^3 + \dots$

(iii) $(1/4) + 2^2(1/4)^2 + 3^2(1/4)^3 + \dots$

③ Find the derivatives of the following functions, showing all work.

(a) $f(x) = \sin(x^2)$

(b) $f(x) = \frac{\sin x}{x}$

(c) $h(x) = \tan^2(3x-2)$

④ Given $\sin y + \cos x = 1$, find y'