Luis Ricardo Reyes Villar 21070343
04/03/2022

1. Dados las funciones calcula las sumatorias correspondientes.

$a=0 \quad b=3 \quad c=4 \quad d=3$

$f(x)=(a+1)x^2+(b+1)x+c = f(x)=x^2+4x+4$

$g(x)=(d+1)x+c = g(x)=4x+4$

$$\sum_{i=a}^{a+1} (f(i)+g(i))^2 =$$

$$\sum_{i=0}^{1} (f(i)+g(i))^2 = (f(0)+g(0))^2+(f(1)+g(1))^2 =$$

$$(4+4)^2+(9+8)^2 = 8^2+17^2 = 64+289 = \underline{\underline{353}}$$

$f(0)=0^2+4(0)+4=4$

$f(1)=1^2+4(1)+4=1+4+4=9$

$g(0)=4(0)+4=4$

$g(1)=4(1)+4=8$

11. Resuelve las siguientes integrales definidas

$$\int_a^{a+1} \frac{(x^{c+1}+x^{d+1})}{x^{b+1}}\,dx =$$

$$\int_0^1 \frac{(x^5+x^4)}{x^4}\,dx = x^1+1\,dx = \frac{x^2}{2}+x\Big|_0^1 =$$

$$\frac{(1)^2}{2}+1-\left(\frac{(0)^2}{2}+0\right) = \frac{1}{2}+1 = \underline{1.5}$$

$$\int_a^{a+1} \frac{\left(\sqrt[c+1]{x^{a+1}} + x^{b+1}\right)}{\sqrt{x^{d+1}}} dx = \int_0^1 \frac{\left(\sqrt[4+1]{x^{0+1}} + x^{3+1}\right)}{\sqrt{x^{3+1}}} dx =$$

$$\int_0^1 \frac{\left(\sqrt[5]{x} + x^4\right)}{\sqrt{x^4}} dx = \frac{\left(x^{\frac{1}{5}} + x^4\right)}{x^2} dx = \left(x^{-\frac{9}{5}} + x^2\right) dx =$$

$$\frac{x^{-\frac{9}{5}+1}}{-\frac{9}{5}+1} + \frac{x^{2+1}}{2+1} = \frac{x^{-\frac{4}{5}}}{-\frac{4}{5}} + \frac{x^3}{3} = -\frac{5}{4}x^{-\frac{4}{5}} + \frac{x^3}{3}\Big|_0^1 =$$

$$-\frac{5}{4}\frac{1}{x^{\frac{4}{5}}} + \frac{x^3}{3} = -\frac{5}{4x^{\frac{4}{5}}} + \frac{x^3}{3}\Big|_0^1 =$$

$$-\frac{5}{4(1)^{\frac{4}{5}}} + \frac{1^3}{3} - \left(-\frac{5}{4(0)^{\frac{4}{5}}} + \frac{0^3}{3}\right) = -\frac{5}{4} + \frac{1}{3} + \frac{5}{0} - 0$$

indefinida

La integral es divergente