Examen Bloque 3 | 15/12/21

1.- calcular el valor de la diferencial de la función en el punto dado y para el incremento indicado

$$W = \sqrt{\frac{4-v^2}{1+v^2}} \quad si \quad v=0 \quad y \quad \Delta r = \frac{1}{25}$$

$$\frac{du}{dv} = \frac{(1+v^2)(2v)-4-v^2)+2v}{(1+v^2)}$$

$$\frac{du}{q} = u^{1/2} + 1/2\, u^{-1/2} \cdot du = \left(\frac{4-v^2}{1+v^2}\right)^{1/2} \cdot \frac{10r}{(1+r^2} dx$$

$$= \infty$$

2.- Determina el resultado de $\int \sqrt{5}x \ln \frac{x}{5} dx$

$$\int \frac{\sqrt{5x}\, x}{5} dx = \int \frac{(5x)^{1/2}}{5} dx$$

$$\int \frac{5^{1/2} \cdot x^{1/2} \cdot x}{5} dx = \int \frac{x^{3/2}}{5^{1/2}} dx$$

$$= \frac{\sqrt{5}}{5} \cdot \frac{2x^2\sqrt{x}}{5}$$

$$= \frac{2x^2\sqrt{5x}}{25}$$

3.- Resuelve y comprueba la siguiente integral

$u = \cos(5x) \quad dv = e^{2x}$

$du = -5\sin(5x)dx \quad v = 1/2\, e^{2x}$

$\cos(5x) \cdot 1/2\, e^{2x} - \int 1/2\, e^{2x} \cdot (-5\sin(5x))\, dx$

$u = \sin(5x) \quad dv = e^{2x}$

$du = 5\cos(5x \quad v = 1/2\, e^{2x}$

$\int e^{2x}\cos(5x) + 5/4\, e^{2x}\sin(5x) - 25/4 \int 1/2\, e^{2x}(5\cos(5x)dx) + C$

$\int e^{2x}\cos(5x)dx = 1/2\, e^{2x}\cos(5x) + 5/4\, e^{2x}\sin(5x) - 25/4 \int e^{2x}\cos(5x)$

$29/4 \int e^{2x}\cos(5x)dx = 1/2\, e^{2x}\cos(5x) + 5/4 + e^{2x}\sin(5x) + C$

$\int e^{2x}\cos(5x)dx = 4/29(1/2\, e^{2x}\cos(5x) + 5/4\, e^{2x}\sin(5x)) + C$

$\int e^{2x}\cos(5x)dx = 4/29(1/2\, e^{2x}\cos(5x) + 5/4\, e^{2}\sin(5x)) + C$

4.- calcula la siguiente integral $\int \frac{2x^4 - 2x^3 + x + 1}{x^3 - x^2} dx$

$= 2x + \frac{x+1}{x^2 - x^2}$

$x + 1 = Ax - A + Bx^2 + xB + Cx^2$

$x + 1 = Bx^2 + Cx^2 + Ax + xB - 1A$

$0 = B + C$

$1 = A - B \qquad \frac{1}{-1} = A \qquad A = 1$

$1 = -1A$

$1 = A - B \qquad 0 = B + C$

$1 = 1 + B \qquad -2 = C$

$B = 2 \qquad C = -2$

Escaneado con CamScanner

$$\int 2x - 1/x^2 + \frac{2}{x} - \frac{-2}{x+1} = 2\int x - \int x^{-2} + 2\int \frac{2}{x} - 2\int \frac{1}{x-1}$$

$$= \frac{4x^2}{4} - \frac{x^{-1}}{-1} - 2\ln|x| + 2\ln|x-1| + C$$

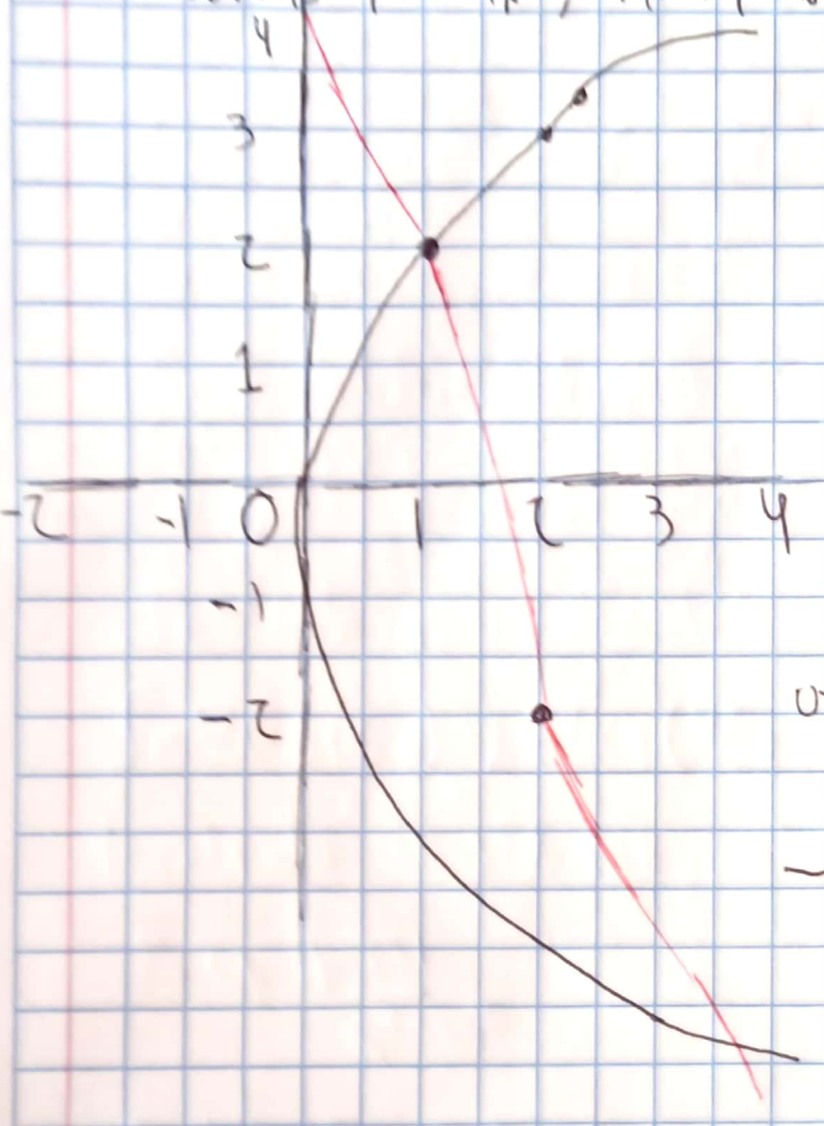
$$= x^2 + 1/x - 2\ln(x) + 2\ln(x-1) + C$$

$$d = (x^2 + x^{-1} - 2\ln(x) + 2\ln(x-1))$$

$$2x - \frac{2x^{-2}}{-2} - \frac{2}{x} + \frac{2}{x-1} + C \quad dx$$

$$= 2x + \frac{1}{x^2} - \frac{2}{x} + \frac{2}{(x+1)}$$

5- graficar y obtener el area limitada por las curvas $y^2 = 4x$, $4x + y - 6 = 0$



$f_1(x) = 2\sqrt{x}$

$f_2(x) = -2\sqrt{x}$

$f_3(x) = -4x + 6$

$2\sqrt{x} = -2\sqrt{x}$; x : 0

$2\sqrt{x} = -4x + 6$; $x = 1$

$-2\sqrt{x} = -4x + 6$; $x = 9/4$

$$\int_0^1 2\sqrt{x} - (-2\sqrt{x})\,dx = \frac{8}{3}$$

$$\int -2\sqrt{x} - (-4x + 6)\,dx = \frac{61}{24}$$

$$\frac{8}{3} + \frac{61}{24} = \frac{125}{24}$$