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Nombre del trabajo:

Ejercicios

PASIÓN POR EDUCAR

Materia:

Matemáticas Aplicadas

Grado: 6to Cuatrimestre

Grupo: Único

$$7 = \int \frac{dx}{16x^2 + 4} \quad v^2 = 16x^2 \quad v = 4x \quad dv = 4 \quad a^2 = 4 \quad a = 2$$

$$\frac{1}{4} \cdot \frac{1}{2} \operatorname{arc tan} \frac{4x}{2} + C$$

$$\frac{1}{8} \operatorname{arc tan} \frac{4x}{2} + C$$

$$2 = \int \frac{dx}{\sqrt{25x^2 + 1}} \quad v^2 = 25x^2 \quad v = 5x \quad dv = 5 \quad a^2 = 1 \quad a = 1$$

$$\frac{1}{5} \ln \left| 5x + \sqrt{25x^2 + 1} \right| + C$$

$$3 = \int \frac{dx}{36 - x^2} \quad v^2 = x^2 \quad v = x \quad dv = \quad a^2 = 36 \quad a = 6$$

$$\frac{1}{12} \ln \left| \frac{6+x}{6-x} \right| + C$$

$$4 = \int \frac{dx}{\sqrt{4 - 4x^2}} \quad v^2 = 4x^2 \quad v = 2x \quad dv = 2 \quad a^2 = 4 \quad a = 2$$

$$\frac{1}{2} \operatorname{arc sin} \frac{2x}{2} + C$$

$$5 = \int \frac{dx}{2x\sqrt{4x^2 - 16}} \quad v^2 = 4x^2 \quad v = 2x \quad dv = 2 \quad a^2 = 16 \quad a = 4$$

$$\frac{1}{2} \cdot \frac{1}{4} \operatorname{arc sec} \frac{2x}{4} + C$$

$$\frac{1}{8} \operatorname{arc sec} \frac{2x}{4} + C$$

6. $\int \sqrt{25-25x^2} dx$ $v^2 = 25x^2$ $v = 5x$ $dv = 5$
 $a^2 = 25$ $a = 5$

$\frac{1}{5} \frac{5x}{2} \sqrt{25-25x^2} + \frac{25}{2} \arcsin \frac{5x}{5} + c$

$\frac{5x}{10} \sqrt{25-25x^2} + \frac{25}{2} \arcsin \frac{5x}{5} + c$

7. $\int \sqrt{x^2-49} dx$ $v^2 = x^2$ $v = x$ $dv =$ $a^2 = 49$ $a = 7$

$\frac{x}{2} \sqrt{x^2-49} - \frac{49}{2} \ln |x + \sqrt{x^2-49}| + c$

8. $\int \frac{dx}{\sqrt{4x^2-25}}$ $v^2 = 4x^2$ $v = 2x$ $dv = 2$ $a^2 = 25$ $a = 5$

$\frac{1}{2} \frac{1}{10} \ln \left| \frac{2x-5}{2x+5} \right| + c = \frac{1}{20} \ln \left| \frac{2x-5}{2x+5} \right| + c$

9. $\int \frac{dx}{\sqrt{36x^2-1}}$ $v^2 = 36x^2$ $v = 6x$ $dv = 6$ $a^2 = 1$ $a = 1$

$\frac{1}{6} \ln |6x + \sqrt{36x^2-1}| + c$

10. $\int \frac{dx}{1-36x^2}$ $v^2 = 36x^2$ $v = 6x$ $dv = 6$ $a^2 = 1$ $a = 1$

$\frac{1}{6} \frac{1}{2} \ln \left| \frac{1+6x}{1-6x} \right| + c$

$\frac{1}{12} \ln \left| \frac{1+6x}{1-6x} \right| + c$

$$11. \int \frac{dx}{\sqrt{49x^2 - 4}} \quad v^2 = 49x^2 \quad v = 7x \quad dv = 7 \quad a^2 = 4 \quad a = 2$$

$$\frac{1}{7} \ln \left| 7x + \sqrt{49x^2 - 4} \right| + C$$

$$12. \int \frac{dx}{4x^2 - 1} \quad v^2 = 4x^2 \quad v = 2x \quad dv = 2 \quad a^2 = 1 \quad a = 1$$

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

$$13. \int \sqrt{1-9x^2} dx \quad v^2 = 9x^2 \quad v = 3x \quad dv = 3 \quad a^2 = 1 \quad a = 1$$

$$\frac{1}{3} \frac{3x}{2} \sqrt{1-9x^2} + \frac{1}{2} \arcsin \frac{3x}{1} + C$$

$$\frac{3x}{6} \sqrt{1-9x^2} + \frac{1}{2} \arcsin \frac{3x}{1} + C$$

$$14. \int \frac{dx}{\sqrt{4x^2 - 9}} \quad v^2 = 4x^2 \quad v = 2x \quad dv = 2 \quad a^2 = 9 \quad a = 3$$

$$\frac{1}{2} \frac{2x}{2} \sqrt{4x^2 - 9} - \frac{9}{2} \ln \left| 2x + \sqrt{4x^2 - 9} \right| + C$$

$$\frac{2x}{4} \sqrt{4x^2 - 9} - \frac{9}{2} \ln \left| 2x + \sqrt{4x^2 - 9} \right| + C$$

$$15 \int \frac{dx}{16x^2 - 25} \quad v^2 = 16x^2 \quad v = 4x \quad dv = 4 \quad a^2 = 25 \quad a = 5$$

$$\frac{1}{4} \frac{1}{10} \ln \left| \frac{4x-5}{4x+5} \right| + C$$

$$\frac{1}{40} \ln \left| \frac{4x-5}{4x+5} \right| + C$$

$$16 \int \frac{dx}{4x\sqrt{16x^2-1}} \quad v^2 = 16x^2 \quad v = 4x \quad dv = 4 \quad a^2 = 1 \quad a = 1$$

$$\frac{1}{4} \operatorname{arc} \sec \frac{4x}{1} + C$$