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INTEGRALES

1.- $\int \frac{dx}{16x^2+9}$ $a^2=9 \quad a=3$

$v^2=16x^2 \quad v=4x \quad dv=4$

$\frac{1}{4}\cdot\frac{1}{3}\arctan\frac{4x}{3} = \frac{1}{12}\arctan\frac{4x}{3}+C$

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

$a^2=1 \quad a=1$

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

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

$a^2=36 \quad a=6$

$\frac{1}{2(6)}\ln\left|\frac{6+x}{6-x}\right| = \frac{1}{12}\ln\left|\frac{6+x}{6-x}\right|+C$

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

$v^2=4x^2 \quad v=2x \quad dv=2$

$\frac{1}{2}\arcsen\frac{2x}{2}+C$

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

$a^2=16 \quad a=4$

$\frac{1}{2}\cdot\frac{1}{4}\arcsen\frac{2x}{4} = \frac{1}{8}\arcsen\frac{2x}{4}+C$

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

$v^2=25x^2 \quad v=5x \quad dv=5$

$\frac{1}{5}\cdot\frac{5x}{2}\sqrt{25-25x^2}+\frac{25}{2}\arcsen$

$= \frac{5x}{10}\sqrt{25-25x^2}+\frac{25}{2}\arcsen+C$

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

$\frac{x}{2}\sqrt{x^2+49} - \frac{49}{2} \ln\left(x + \sqrt{x^2+49}\right) + C$

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

$\frac{1}{2}\cdot\frac{1}{2(5)} \ln\left|\frac{2x-5}{2x+5}\right| = \frac{1}{20}\ln\left|\frac{2x-5}{2x+5}\right| + C$

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

$\frac{1}{6}\cdot\frac{1}{2(1)} \ln\left|\frac{1+6x}{1-6x}\right| = \frac{1}{12}\ln\left|\frac{1+6x}{1-6x}\right| + C$

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

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

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

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

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

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

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

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

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

$\frac{1}{4}$ $\frac{1}{2(5)} \ln \left| \frac{4x-5}{4x+5} \right| = \frac{1}{40} \ln \left| \frac{4x-5}{4x+5} \right| + C$

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

$\frac{1}{4}$ $\frac{1}{1}$ arc sen $\frac{4x}{1} = \frac{1}{4}$ arc sen $\frac{4x}{1} + C$