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# Integrales

$$1. \int \frac{dx}{16x^2+4} = \frac{u^2=16x^2}{a^2=4 \quad a=2} \quad u=4x \quad du=4 \quad = \frac{1}{4} \cdot \frac{1}{2} \arctan \frac{2}{4} = \frac{1}{8} \arctan \frac{2}{4} + C$$

$$2. \int \frac{dx}{\sqrt{25x^2+1}} \quad v^2=25x^2 \quad u=5x \quad du=5 = \frac{1}{5} \left( 5x + \sqrt{25x^2+1} \right) + C$$

$$3. \int \frac{dx}{36-x^2} \quad a^2=36 \quad a=6 \quad v^2=x^2 \quad u=x \quad du=dx = \frac{1}{2(6)} \ln \left| \frac{x-6}{x+6} \right| = \frac{1}{12} \ln \left| \frac{x-6}{x+6} \right| + C$$

$$4. \int \frac{dx}{\sqrt{4-4x^2}} \quad a^2=4 \quad a=2 \quad v^2=4x^2 \quad u=2x \quad du=2 = \frac{1}{2} \arcsen \frac{2x}{2} + C$$

$$5. \int \frac{dx}{2x\sqrt{4x^2-16}} \quad U^2=4x^2 \quad v=2x \quad du=2 = \frac{1}{2} \cdot \frac{1}{4} \arcsen \frac{2x}{4} = \frac{1}{8} \arcsen \frac{2x}{4} + C$$

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

$$\frac{1}{5} \left( \frac{5x}{2} \sqrt{25-25x^2} + \frac{25}{2} \arcsen \frac{5x}{5} \right) + C$$

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

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

$$\frac{1}{2} \sqrt{x^2-49} - \frac{49}{2} \ln \left( x + \sqrt{x^2-49} \right) + C$$

$$8. \int \frac{dx}{4x^2 - 25} \quad v^2 = 4x^2 \quad v = 2x \quad dv = 2 = \frac{1}{2} \frac{1}{2(5)} \ln \left| \frac{5+2}{5-2} \right| + C$$

$$\frac{1}{20} \ln \left| \frac{5+2}{5-2} \right| + C$$

$$9. \int \frac{dx}{\sqrt{36x^2 - 1}} \quad v^2 = 36x^2 \quad v = 6x \quad dv = 6 = \frac{1}{6} \ln |6x + \sqrt{36x^2 - 1}| + C$$

$$10. \int \frac{dx}{1 - 36x^2} \quad a^2 = 1 \quad a = 1 \quad v^2 = 36x^2 \quad v = 6x \quad dv = 6 = \frac{1}{6} \frac{1}{2(1)} \ln \left| \frac{1+6x}{1-6x} \right| = \frac{1}{12} \ln \left| \frac{1+36x^2}{1-36x^2} \right| + C$$

$$11. \int \frac{dx}{\sqrt{49x^2 - 4}} \quad v^2 = 49x^2 \quad v = 7x \quad dv = 7 = \frac{1}{7} \ln |7x + \sqrt{49x^2 - 4}| + C$$

$$12. \int \frac{dx}{4x^2 - 1} \quad v^2 = 4x^2 \quad v = 2x \quad dv = 2 = \frac{1}{2} \frac{1}{2(1)} \ln \left| \frac{2x-1}{2x+1} \right| = \frac{1}{4} \ln \left| \frac{4x^2-1}{4x^2+1} \right| + C$$

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

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

$$14. \int \frac{dx}{\sqrt{4x^2 - 9}} \quad v^2 = 4x^2 \quad v = 2x \quad dv = 2 = \frac{1}{2} \ln |2x + \sqrt{4x^2 - 9}| + C$$

$$15. \int \frac{dx}{16x^2 - 25} \quad v^2 = 16x^2 \quad v = 4x \quad dv = 4 = \frac{1}{4} \frac{1}{2(5)} \ln \left| \frac{4x-5}{4x+5} \right| = \frac{1}{40} \ln \left| \frac{4x-5}{4x+5} \right| + C$$

$$16. \int \frac{dx}{4x\sqrt{16x^2 - 1}} \quad v^2 = 16x^2 \quad v = 4x \quad dv = 4 = \frac{1}{4} \frac{1}{1} \arcsin \frac{4x}{1} = \frac{1}{4} \arcsin \frac{4x}{1} + C$$

