

$$1: \int \frac{dx}{x^2 + 81} \quad v^2 = x^2 \quad v = x \quad dv = 1 \quad a^2 = 81 \quad a = 9$$

$$\frac{1}{9} \arctan \frac{x}{9} + c$$

$$2: \int \frac{dx}{9x^3 - 144} \quad v^2 = 9x^2 \quad v = 3x \quad dv = 3 \quad a^2 = 144 \quad a = 12$$

$$\frac{1}{3} \frac{1}{2(12)} \ln \left| \frac{3x - 12}{3x + 12} \right| + c$$

$$\frac{1}{72} \ln \left| \frac{3x - 12}{3x + 12} \right| + c$$

$$3: \int \frac{dx}{\sqrt{25 - 9x^2}} \quad v^2 = 9x^2 \quad v = 3x \quad dv = 3 \quad a^2 = 25 \quad a = 5$$

$$\frac{1}{3} \arcsin \frac{3x}{5} + c$$

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

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

$$5: \int \frac{dx}{x\sqrt{4x^2 - 9}} \quad v^2 = 4x^2 \quad v = 2x \quad dv = 2 \quad a^2 = 9 \quad a = 3$$

$$\frac{1}{2} \frac{1}{3} \operatorname{arcSec} \frac{2x}{3} + c$$

$$\frac{1}{6} \operatorname{arcSec} \frac{2x}{3} + c$$

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$$6: \int \frac{dx}{25-4x^2} \quad v^2=4x^2 \quad v=2x \quad dv=2 \quad a^2=25 \quad a=5$$
$$\frac{1}{2} \frac{1}{2(5)} \ln \left| \frac{5+2x}{5-2x} \right| + C = \frac{1}{20} \ln \left| \frac{5+2x}{5-2x} \right| + C$$

$$7: \int \frac{dx}{y^2-16} \quad v^2=y^2 \quad v=y \quad dv=1 \quad a^2=16 \quad a=4$$
$$\frac{1}{2(4)} \ln \left| \frac{y-4}{y+4} \right| + C = \frac{1}{8} \ln \left| \frac{y-4}{y+4} \right| + C$$

$$8: \int \frac{dx}{x^2+36} \quad v^2=x^2 \quad v=x \quad dv=1 \quad a^2=36 \quad a=6$$
$$\frac{1}{6} \arctan \frac{x}{6} + C$$

$$9: \int \frac{dx}{16x^2-9} \quad v^2=16x^2 \quad v=4x \quad dv=4 \quad a^2=9 \quad a=3$$
$$\frac{1}{4} \frac{1}{2(3)} \ln \left| \frac{4x-3}{4x+3} \right| + C = \frac{1}{24} \ln \left| \frac{4x-3}{4x+3} \right| + C$$

$$10: \int \frac{dx}{\sqrt{9-25x^2}} \quad v^2=25x^2 \quad v=5x \quad dv=5 \quad a^2=9 \quad a=3$$
$$\frac{1}{5} \arcsin \frac{5x}{3} + C$$