2 $$\int \frac{\sin^{-1}x}{\sqrt{1-x^2}}\,dx$$

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

$u = \sin^{-1}x$

$du = (1-x^2)^{-1/2}\,dx$

$$\int u\,du = \frac{u^2}{2} + c$$

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

3 $$\int (\tan x)^6 \sec^2 x\,dx$$

$u = \tan x$

$du = \sec^2 x\,dx$

$$\int u^6\,du = \frac{u^7}{7} + c$$

$$= \frac{(\tan x)^7}{7} + c$$

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1 $\int \frac{2x}{\sqrt{4x^2-1}}\,dx$

$u = \sqrt{(4x^2-1)} = (4x^2-1)^{1/2}$

$\frac{du}{dx} = \frac{1}{2}(4x^2-1)^{-1/2} \cdot 8x$

$\frac{du}{dx} = 4x(4x^2-1)^{-1/2}$

$dx = \frac{du}{4x(4x^2-1)^{-1/2}} = \frac{(4x^2-1)^{1/2}\,du}{4x}$

$dx = \frac{(4x^2-1)^{1/2}\,du}{4x}$

$\int \frac{2x}{u} \cdot \frac{(4x^2-1)^{1/2}\,du}{4x}$

$\int \frac{1}{(4x^2-1)^{1/2}} \cdot \frac{(4x^2-1)^{1/2}}{2}\,du$

$\frac{1}{2}\int du$

$\frac{1}{2}u + c$

$\frac{1}{2}\sqrt{4x^2-1} + c$