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

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

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

$\int \sin^{-1}x \cdot (1-x^2)^{-\frac{1}{2}} \cdot \frac{du}{(1-x^2)^{-\frac{1}{2}}}$

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

$\int u \cdot du$

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

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

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

$u = \tan x$

$\frac{du}{dx} = \sec^2 x$

$dx = \frac{du}{\sec^2 x}$

$\int u^6 \cdot \sec^2 x \cdot \frac{du}{\sec^2 x}$

$\int u^6 \cdot du$

$\frac{u^7}{7} + c$

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

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

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

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

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

$dx = \frac{\sqrt{4x^2-1}}{4x} du$

$\int \frac{2x}{u} dx$

$\int \frac{2x}{\sqrt{4x^2-1}} \cdot \frac{\sqrt{4x^2-1}}{4x} du$

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

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

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

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

$\int \sin^{-1} x \cdot (1-x^2)^{-\frac{1}{2}} dx$