Tuesday - December 8, 2015

⑰ $-\frac{1}{2}\,5\int \overset{-2}{\cancel{5}}x\sqrt[3]{1-x^2}\,dx$

$u = 1-x^2$

$du = -2x\,dx$

$-\frac{1}{2}\cdot 5\int \sqrt[3]{u}\,du$

$-\frac{5}{2}\cdot\frac{3}{4}u^{\frac{4}{3}}+c$

$\boxed{-\frac{15}{8}(1-x^2)^{\frac{4}{3}}+c}$

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⑥ $\int \frac{\cos x}{\sin^2 x}\,dx$ $\boxed{u = \sin x}$ $\boxed{du = \cos x\,dx}$

$= \int \frac{\cos x}{\sin x}\cdot\frac{1}{\sin x}\,dx$ $\int u^{-2}\,du$

$-u^{-1}+c$

$-\csc x + c$

$= \int \cot x \csc x\,dx$ $\boxed{u = x}$ $\boxed{du = 1dx}$

$-\csc x + c$

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⑪ $\frac{1}{4}\int 4x^3(x^4+3)^2\,dx$

$u = x^4+3$

$du = 4x^3\,dx$

$\frac{1}{4}\int u^2\,du$

$\frac{1}{4}\frac{1}{3}u^3+c$

$\boxed{\frac{1}{12}(x^4+3)^3+c}$

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4.5 HW #2

8-18 even, 19-23 odd, 27- 33 odd,
41-44 all

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⑭ $\frac{1}{8}\int 8x(4x^2+3)^3\,dx$

$u = 4x^2+3$

$du = 8x\,dx$

$= \frac{1}{8}\int u^3\,du$

$= \frac{1}{8}\cdot\frac{1}{4}u^4+c$

$= \boxed{\frac{1}{32}(4x^2+3)^4+c}$

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⑱ $\frac{1}{3}\int 3u^2\sqrt{u^3+2}\,du$

$t = u^3+2$

$dt = 3u^2\,du$

$= \frac{1}{3}\int \sqrt{t}\,dt$

$= \frac{1}{3}\cdot\frac{2}{3}t^{\frac{3}{2}}+c$

$= \boxed{\frac{2}{9}(u^3+2)^{\frac{3}{2}}+c}$