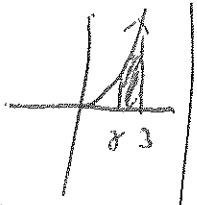
① $\int_2^{13} x^3\,dx$

$F(x)=\frac{1}{4}x^4\Big|_2^{13}$

$F(13)-F(2)$ (160.75)



② $\int_1^2 t^2-2t+8\,dt$

$F(x)=\frac{1}{3}t^3-t^2+8t\Big|_1^2$

$F(2)-F(1)$ (7.333)

③ $\int_1^3 x^{-2}\,dx$

$F(x)=-1x^{-1}\Big|_1^3$

$F(3)-F(1)=$ (.667)

④ $\int_1^2 x^{-3}-2x^{-2}+x^{-4}\,dx$

$F(x)=\frac{-1}{3}x^{-3}+2x^{-1}-\frac{1}{3}x^{-3}\Big|_1^2$

(=-.333)

⑤ $\int_4^9 2x\,y^{1/2}\,dy$

$\int_4^9 2x^{3/2}\,dx$

$F(x)=\frac{4}{5}y^{5/2}\Big|_4^9$

(148.8)

⑥ $\int_3^6 (t^2-2t)\,dt$

$F(x)=\frac{1}{3}t^3-t^2\Big|_3^6$

(36)

⑦ $\int_1^4 \frac{x^5-x}{3x^3}=\int_1^4 \frac{1}{3}x^2-\frac{1}{3}x^{-3}\,dx$

$F(x)=\frac{1}{9}x^3+\frac{1}{3}x^{-1}\Big|_1^4$

(6.75)

⑧ $\int_1^2 t^2(t^3+1)^{1/2}\,dt$ $u=t^3+1$ $du=3t^2dt$

$\int_1^2 t^2\cdot u^{1/2}\,du/3t^2$

$\int_1^2 \frac{1}{3}u^{1/2}\,du$

$F(x)=\frac{2}{9}u^{3/2}\Big|_2^9$

(5.37)

⑨ $\int_1^3 x(3x^2+1)^{-3}\,dx$ $u=3x^2+1$ $du=6x\,dx$

$\int_1^3 x(u)^{-3}\frac{du}{6x}$

$\int_1^3 \frac{1}{6}u^{-3}\,du$

$F(x)=\frac{-1}{12}u^{-2}\Big|_1^3$

$F(x)=-1/12(3x^2+1)^{-2}\Big|_1^3$

(.021)

⑩ $\int_{-3}^{8}(x^2-3x-10)\,dx$

$F(x)=\frac{1}{3}x^3-\frac{3}{2}x^2-10x\Big|_{-3}^{8}$

(=-72.833)

$-x^2+3x+10=0$

$(x-5)(x+2)$

$x=5,-2$

$\int_{-3}^{-2} x^2-3x-10$ $F(-2)-F(-3)=3.833$

$\int_{-2}^{5} x^2-3x-10$ $F(5)-F(-2)=-57.167$

$\int_{5}^{8} x^2-3x-10$ $F(8)-F(5)=40.5$

(101.5)

⑪ $\int_{\pi/6}^{\pi/3} (1-\cos(3x))\cdot\sin(3x)\,dx$ $u=1-\cos(3x)$ $du=3\sin(3x)dx$

$\int_{\pi/6}^{\pi/3} (u)\cdot\sin(3x)\frac{du}{3\sin(3x)}$

$\int_{\pi/6}^{\pi/3}\frac{1}{3}u\,du$

$F(x)=\frac{1}{6}u^2\Big|_{\pi/6}^{\pi/3}$

$F(x)=1/6(1-\cos(3x))^2\Big|_{\pi/6}^{\pi/3}$

.05

⑫ $\int_0^1 \frac{5x}{(1+x^2)^2}\,dx$ $u=1+x^2$

$\int_0^1 5x(1+x^2)^{-2}$ $du=2x\,dx$

$\int_0^1 5x(u)^{-2}\,du/2x$

$\int_0^1 \frac{5}{2}(u)^{-2}\,du$

$\frac{-5}{2}u^{-1}\Big|_0^1=\frac{-5}{2}(1+x^2)^{-1}\Big|_0^1$

1.25

$\frac{-5}{2}u^{-1}\Big|_1^2$ (=1.25)

⑬ $\int_{-\pi/2}^{0}\sin(x)\cdot(3\cos(x))^{-2}\,dx$ $u=3\cos(x)$ $du=-\sin(x)dx$

$\int_{-\pi/2}^{0}\sin(x)\cdot(u)^{-2}\,du/-\sin(x)$

$\int_{-\pi/2}^{0}-(u)^{-2}\,du$

$u^{-1}\Big|_{-\pi/2}^{0}=(3\cos(x))^{-1}\Big|_{-\pi/2}^{0}$

-.083