10. $\int 2x \sin(x^2)\,dx$

$u = x^2 \quad du = 2x\,dx$

$= \int \sin u\,du$

$= -\cos u + C$

$= \boxed{-\cos(x^2) + C}$

11. $\int -14x e^{-7x^2+3}\,dx$

$u = -7x^2+3 \quad du = -14x\,dx$

$= \int e^u\,du$

$= e^u + C$

$= \boxed{e^{-7x^2+3} + C}$

12. $\int x \sin(x^2-3)\cos(x^2-3)\,dx$

$u = \sin(x^2-3) \quad du = \cos(x^2-3)\cdot\frac{d}{dx}(x^2-3)\,dx$

$du = 2x\cos(x^2-3)\,dx$

$= \frac{1}{2}\int 2x \sin(x^2-3)\cos(x^2-3)\,dx$

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

$= \frac{1}{2}\cdot\frac{1}{2}u^2 + C$

$= \frac{1}{4}u^2 + C$

$= \frac{1}{4}[\sin(x^2-3)]^2 + C$

$= \boxed{\frac{1}{4}\sin^2(x^2-3) + C}$

13. $\int \sqrt[3]{\tan x}\sec^2 x\,dx$

$u = \tan x \quad du = \sec^2 x\,dx$

$= \int \sqrt[3]{u}\,du$

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

$= \frac{u^{\frac{1}{3}+1}}{\frac{1}{3}+1} + C$

$= \frac{u^{\frac{4}{3}}}{\frac{4}{3}} + C$

$= \frac{3}{4}u^{\frac{4}{3}} + C$

$= \boxed{\frac{3}{4}(\tan x)^{\frac{4}{3}} + C}$