(2e) $\int (18x^2+5)\sqrt{6x^3+5x+1}\,dx$

$u = 6x^3+5x+1$

$\frac{du}{dx} = 18x^2+5 \quad \therefore dx = \frac{du}{18x^2+5}$

$\int (18x^2+5)\sqrt{u}\,\frac{du}{18x^2+5}$

$= \int \sqrt{u}\,du$

$= \int u^{1/2}\,du$

$= \frac{u^{3/2}}{3/2} + C$

$= \frac{2u^{3/2}}{3} + C$

$\therefore = \frac{2(6x^3+5x+1)^{3/2}}{3} + C$