Indefinite Integral

$(1) \int x^n \, dx = \dfrac{x^{n+1}}{n+1} + c$

$(2) \int (ax+b)^n \, dx = \dfrac{(ax+b)^{n+1}}{a(n+1)} + c$ $\left(\text{must be a linear function}\right)$

$\text{e.g.} (i) \int (2-5x)^3 \, dx = \dfrac{1}{4(-5)}(2-5x)^4 + c$

$= -\dfrac{1}{20}(2-5x)^4 + c$

$$(ii) \int \frac{dx}{(3x+1)^2} = \int (3x+1)^{-2} dx$$

$$= -\frac{1}{3}(3x+1)^{-1} + c$$

$$= \frac{-1}{3(3x+1)} + c$$

$$(iii) \int \sqrt{2x+1}\, dx = \int (2x+1)^{\frac{1}{2}} dx$$

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

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

$$= \frac{1}{3}(2x+1)\sqrt{2x+1} + c$$

Exercise 5E; 2be, 7c, 8ejl, 11cj, 13ah, 14ac, 16a, 19bei, 20