Indefinite Integral

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

$$(2)\int (ax+b)^n dx = \frac{(ax+b)^{n+1}}{a(n+1)} + c \qquad (\text{must be a linear function})$$

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

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

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

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

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

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

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

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

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

Exercise 11D; 1bei, 2bcg, 4afh, 5cfi, 6ceh, 7bfil, 8*