

## أدرب وأحل المسائل

### التكامل غير المحدود

أجد اقتراناً أصلياً لكلٍّ من الاقترانات الآتية:

$$(1) f(x) = x^7$$

$$f(x) = x^7 G(x) = 18x^8 + C$$

$$(2) f(x) = -2x^6$$

$$f(x) = -2x^6 G(x) = -27x^7 + C$$

$$(3) f(x) = -10$$

$$f(x) = -10 G(x) = -10x + C$$

$$(4) f(x) = 8x$$

$$f(x) = 8x G(x) = 4x^2 + C$$

أجد كلاً من التكاملات الآتية:

$$(5) \int 6x \, dx$$

$$\int 6x \, dx = 3x^2 + C$$

$$(6) \int (7x - 5) \, dx$$

$$\int (7x - 5) \, dx = 7/2 x^2 - 5x + C$$

$$(7) \int (3 - 4x) \, dx$$

$$\int (3 - 4x) \, dx = 3x - 2x^2 + C$$

$$(8) \int 10x \, dx$$

$$\int 10x \, dx = \int 10x - 12 \, dx = 20x^{1/2} + C = 20\sqrt{x} + C$$

$$(9) \int 2x^{3/2} \, dx$$

$$\int 2x^3 dx = 45x^5 + C$$

(10)  $\int (2x^4 - 5x + 10) dx$

$$\int (2x^4 - 5x + 10) dx = 25x^5 - 52x^2 + 10x + C$$

(11)  $\int (2x^3 - 2x) dx$

$$\int (2x^3 - 2x) dx = 12x^4 - x^2 + C$$

(12)  $\int (3x^3 - x^3) dx$

$$\int (3x^3 - x^3) dx = \int (3x - 13 - x^3) dx = 92x^23 - 25x^5 + C = 92x^23 - 25x^5 + C$$

(13)  $\int (1x^2 - 1x^3) dx$

$$\int (1x^2 - 1x^3) dx = \int (x - 2 - x - 3) dx = -x - 1 + 12x - 2 + C = -1x + 12x^2 + C$$

أجد كلاً من التكاملات الآتية:

(14)  $\int 4x^3 - 2x^3 dx$

$$\int 4x^3 - 2x^3 dx = \int (4x^3 - 2x^3) dx = \int (4 - 2x - 3) dx = 4x + x - 2 + C = 4x + 1x^2 + C$$

(15)  $\int 2x + 8x dx$

$$\int 2x + 8x dx = \int (2x + 8x) dx = \int (2x^{12} + 8x - 12) dx = 43x^3 + 16x^{12} + C = 43x^3 + 16x + C$$

(16)  $\int (x-1)^2 dx$

$$\int (x-1)^2 dx = \int (x^2 - 2x + 1) dx = 13x^3 - x^2 + x + C$$

(17)  $\int x^3 + 8x + 2 dx$

$$\int x^3 + 8x + 2 dx = \int (x+2)(x^2 - 2x + 4)x + 2 dx = \int (x^2 - 2x + 4) dx = 13x^3 - x^2 + 4x + C$$

(18)  $\int x(x-1) dx$

$$\int x(x-1) dx = \int (x^2 - x) dx = 25x^5 - 23x^3 + C = 25x^5 - 23x^3 + C$$

(19)  $\int (2x-3)(3x-1) dx$

$$\int (2x-3)(3x-1) dx = \int (6x^2 - 2x - 9x + 3) dx = \int (6x^2 - 11x + 3) dx = 2x^3 - 11x^2 + 3x + C$$