

①

∫ : ארבע

∫ : please provide - MC book ②

$$\int \frac{3x}{4x-1} dx \quad (10)$$

$$\frac{3}{4}x + \frac{3}{16} \ln |4x-1| + c \quad \text{∫ : ארבע}$$

$$\int \frac{1}{x(2x+5)} dx \quad (10)$$

$$\frac{1}{5} \ln \left| \frac{x}{2x+5} \right| + c \quad \text{∫ : ארבע}$$

$$\int x \sqrt{2x-3} dx \quad (10)$$

$$\frac{1}{5} (x+1) (2x-3)^{3/2} + c \quad \text{∫ : ארבע}$$

$$\int \frac{1}{x \sqrt{4-3x}} dx \quad (10)$$

$$\frac{1}{2} \ln \left| \frac{\sqrt{4-3x}-2}{\sqrt{4-3x}+2} \right| + c \quad \text{∫ : ארבע}$$

$$\int \frac{1}{5-x^2} dx \quad (10)$$

$$\frac{1}{2\sqrt{5}} \ln \left| \frac{x+\sqrt{5}}{x-\sqrt{5}} \right| + c \quad \text{∫ : ארבע}$$

$$\int \sqrt{x^2-3} dx \quad (10)$$

$$\frac{1}{2} x \sqrt{x^2-3} - \frac{3}{2} \ln |x+\sqrt{x^2-3}| \quad \text{∫ : ארבע}$$

$$\int \frac{x^2}{\sqrt{x^2+4}} dx \quad (10)$$

$$\frac{1}{2} x \sqrt{x^2+4} - 2 \ln |x+\sqrt{x^2+4}| + c \quad \text{∫ : ארבע}$$

2

$$\int \sqrt{9-x^2} dx \quad (1)$$

$$\frac{1}{2} x \sqrt{9-x^2} + \frac{9}{2} \sin^{-1} \frac{x}{3} + C \quad \text{: תשובה סופית}$$

$$\int \frac{\sqrt{3-x^2}}{x} dx \quad (2)$$

$$\sqrt{3-x^2} - \sqrt{3} \ln \left| \frac{\sqrt{3} + \sqrt{3-x^2}}{x} \right| + C \quad \text{: תשובה סופית}$$

2) פתור של שאלות נוספות:  $\int 2x(x^2+1)^{23} dx$  (2)

$$\int 2x(x^2+1)^{23} dx \quad (1)$$

$$t = x^2 + 1 \quad \text{: שינוי משתנים}$$

$$\frac{1}{24} (x^2+1)^{24} + C \quad \text{: תשובה}$$

$$\int \cos^3 x \sin x dx \quad (1)$$

$$t = \cos x \quad \text{: שינוי משתנים}$$

$$-\frac{1}{4} \cos^4 x + C \quad \text{: תשובה}$$

$$\int \frac{1}{\sqrt{x}} \sin \sqrt{x} dx \quad (1)$$

$$t = \sqrt{x} \quad \text{: שינוי משתנים}$$

$$-2 \cos \sqrt{x} + C \quad \text{: תשובה}$$

$$\int \frac{3x dx}{\sqrt{4x^2+5}} \quad (3)$$

$$t = 4x^2 + 5 \quad \text{: שינוי משתנים}$$

$$\frac{3}{4} \sqrt{4x^2+5} + C \quad \text{: תשובה}$$

(3)

$$\int (1 + \sin x)^9 \cos x \, dx \quad (7)$$

~~u = 1 + sin x~~ :  $u = 1 + \sin x$

$$\frac{1}{10} (1 + \sin x)^{10} + C \quad \text{: } \underline{\text{result}}$$

$$\int x^2 \sqrt{1+x} \, dx \quad (11)$$

~~u = 1 + x~~ :  $u = 1 + x$

$$\frac{2}{7} (1+x)^{7/2} - \frac{4}{5} (1+x)^{5/2} + \frac{2}{3} (1+x)^{3/2} + C \quad \text{: } \underline{\text{result}}$$

~~u = 2 - x^2~~ :  $u = 2 - x^2$  (3)

$$\int x (2 - x^2)^3 \, dx \quad (16)$$

$$-\frac{1}{8} (2 - x^2)^4 + C \quad \text{: } \underline{\text{result}}$$

$$\int \cos 8x \, dx \quad (15)$$

$$\frac{1}{8} \sin 8x + C \quad \text{: } \underline{\text{result}}$$

$$\int x \sqrt{7x^2 + 12} \, dx \quad (18)$$

$$\frac{1}{21} (7x^2 + 12)^{3/2} + C \quad \text{: } \underline{\text{result}}$$

$$\int \frac{x^2}{\sqrt{x^3+1}} \, dx \quad (13)$$

$$\frac{2}{3} \sqrt{x^3+1} + C \quad \text{: } \underline{\text{result}}$$

$$\int \frac{\sin(5/x)}{x^2} dx$$

$$\frac{1}{5} \cos(5/x) + c$$

substitution

$$\int \sin^5 3x \cos 3x dx$$

$$\frac{1}{18} \sin^6 3x + c$$

substitution

$$\int \cos 4x \sqrt{2 - \sin 4x} dx$$

$$-\frac{1}{6} (2 - \sin 4x)^{3/2} + c$$

substitution

$$\int x \sqrt{x-3} dx$$

$$\frac{2}{5} (x-3)^{5/2} + 2(x-3)^{3/2} + c$$

substitution

$$\int \frac{x}{\sqrt{x+1}} dx$$

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

substitution

Integration by parts -  $\int x^n e^x dx$

$$\int x^2 e^x dx$$

$$x^2 \cdot e^x - 2x e^x + 2e^x + c$$

$$\int x \sin 2x dx$$

$$-\frac{1}{2} x \cos 2x + \frac{1}{4} \sin 2x + c$$

(5)

$$\int x^2 \cos x \, dx$$

(d)

$$x^2 \sin x + 2x \cos x - 2 \sin x + c \quad \underline{\text{EVAL}}$$

$$\int \sqrt{x} \ln x \, dx$$

(b)

$$\frac{2}{3} x^{3/2} \ln x - \frac{4}{9} x^{3/2} + c \quad \underline{\text{EVAL}}$$

$$\int (\ln x)^2 \, dx$$

(f)

$$x(\ln x)^2 - 2x \ln x + 2x + c \quad \underline{\text{EVAL}}$$

$$\int \ln(2x+3) \, dx$$

(i)

$$x \ln(2x+3) - x + \frac{3}{2} \ln(2x+3) + c \quad \underline{\text{EVAL}}$$

$$\int \frac{1}{\sin x} \, dx$$

(s)

$$\frac{x}{\sin x} + \sqrt{1-x^2} + c \quad \underline{\text{EVAL}}$$

$$\int \frac{1}{\tan x} \, dx$$

(h)

$$\frac{x}{\tan(x)} - \frac{1}{4} \ln(1+4x^2) + c \quad \underline{\text{EVAL}}$$

$$\int e^{ax} \sin bx \, dx$$

(g)

$$\frac{e^{ax}}{a^2+b^2} (a \sin bx - b \cos bx) + c \quad \underline{\text{EVAL}}$$

$$\int x^3 e^{x^2} \, dx$$

(j)

$$\frac{1}{2} x^2 e^{x^2} - \frac{1}{2} e^{x^2} + c \quad \underline{\text{EVAL}}$$