King Saud University

College of Sciences

Department of Mathematics

106 Math   Exercises

(9)

INTEGRATION BY PARTS

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INTEGRATION BY PARTS

$$\int u \, dv = uv - \int v \, du$$

Q . Evaluate the following integrals :

1)

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

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2)

$$\int x \, \sin x \, dx$$

3)

$$\int x \, lnx \, dx$$

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4)

$$\int_{0}^{\pi/4} x \, sec^2x \, dx$$

5)

$$\int (x+1) \ln x \, dx$$

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6)

$$\int x \tan^{-1} x \, dx$$

7)

$$\int 2x \sec^{-1}x \, dx$$

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8)

$$\int x \sin^{-1}x \, dx$$

9)

$$\int lnx \, dx$$

----

10)

$$\int (lnx)^2 \, dx$$

----

11)

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

12)

$$\int tan^{-1}x \, dx$$

----

13)

$$\int sec^{-1}x \, dx$$

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14)

$$\int sin^{-1}x \, dx$$

15)

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

16)

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

17)

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

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18)

$$\int e^{\sqrt{x}}\, dx$$

19)

$$\int \sin(lnx)\, dx$$

20)

$$\int \frac{sin^{-1}(lnx)}{x} \, dx$$

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21)

$$\int (sinx) \, ln(cosx) \, dx$$

22)

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

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23)

$$\int_0^1 x^3 e^{-x^2}\, dx$$

24)

$$\int x \sec x \tan x \, dx$$

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25)

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

26)

$$\int sec^3 x \, dx$$

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27)

$$\int ln(1 + x^2) \, dx$$

28)

$$\int \frac{x^3}{\sqrt{x^2 + 1}} dx$$

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29)

$$\int \frac{1}{x^2} \ln|x| \, dx$$

30)

$$\int x \, coshx \, dx$$