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Maths

Calculus Integration

Integration by Substitution 1

Integration by Substitution 1

Part A Integrate $\sin(c\theta)$

Find
$$\int \sin(c\theta) d\theta$$
.

The following symbols may be useful: c, $\,$ k, $\,$ theta

Part B Integrate $e^{\alpha v}$

Find
$$\int e^{\alpha v} dv$$
.

The following symbols may be useful: alpha, e, k, v

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Integration by Substitution 2



Part A Integrate $(bv+c)^2$

Find
$$\int (bv+c)^2 dv$$
.

The following symbols may be useful: b, c, k, v

Part B Integrate $a(y-b)^3$

Find
$$\int_0^b a(y-b)^3 dy$$
.

The following symbols may be useful: a, $\,$ b

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Integration by Substitution 3



Part A Integrate $3/(z+1)^2$

Find
$$\int_0^2 \frac{3}{(z+1)^2} \mathrm{d}z$$
.

Part B Integrate $e^{-\alpha x}/(1+e^{-\alpha x})^4$

Find
$$\int rac{\mathrm{e}^{-\alpha x}}{(1+\mathrm{e}^{-\alpha x})^4} \mathrm{d}x.$$

The following symbols may be useful: alpha, e, k, x

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Integration by Substitution 4



Part A Integrate 1/(b(x+a))

Find
$$\int_0^a \frac{1}{b} \frac{1}{(x+a)} dx$$
.

The following symbols may be useful: a, b, k, \times

Part B Integrate $x/(1+x^2)$

Find
$$\int_0^1 \frac{x}{1+x^2} dx$$
.

The following symbols may be useful: k, $\ x$

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