

6.3 Integration by Parts

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

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$$\int x \cos(x) dx$$

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$$\int x e^x dx$$

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$$\int \ln x dx$$

Dec 14-11:25 AM

# LIPET

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Repeated use of integration by parts

$$\int x^2 \cos(x) dx$$

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Tabular Integration

$$\int x^2 \cos(x) dx$$

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$$\int x^3 \sin(x) dx$$

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Solve the differential equation  $\frac{dy}{dx} = x \ln(x)$

subject to the initial conditions  $y = -1$  when  $x = 1$

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Find the solution to the differential equation  $\frac{dy}{dx} = \sin^{-1} x$   
if the graph of the solution passes through the point  $(0,0)$

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