

Mr. C. Sdoutz

Unit 6: Applications of Integration
6.1 Differential Equations – Separation of Variables

*recall: solving a differential equation (DE) means to find the antiderivative of a given function

ex. Find the general solution of $\frac{dy}{dx} = x^2$

We can solve more complex DE's by separation of variables – splitting the two variables so they are separated by the equal sign.

ex. Find the general solution of $(x^2 + 4) \frac{dy}{dx} = xy$

*separate so that all x terms are on right side with dx and all y terms are on left side with dy . Then integrate both sides with respect to that side's variable.

ex. Find the particular solution of $yy' = \cos x$ if $y(0) = 2$

ex. Given the DE $y'' - y = 0$ determine which of the following functions are solutions:

a) $y = \sin x$

b) $y = Ce^x$

Practice Questions

Pg. 374/ #3, 9, 13, 25, 31, 33, 39, 40, 43, 45, 47 – 49, 51 – 53, 55, 56



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