

## Worksheet: Differential Equations

IGCSE · Class 12 · Mathematics · 8 questions · 34 marks

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 34

**Q1.** Determine the order and degree (if defined) of  $y'' + 2y' + \sin y = 0$ . [2 marks]

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**Q2.** Find the general solution of  $dy/dx + y = 1$  ( $y$  is not 1). [3 marks]

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**Q3.** Show that  $y' = (x+y)/x$  is homogeneous and solve it. [4 marks]

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**Q4.** Find the general solution of  $dy/dx + y/x = x^2$ . [5 marks]

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**Q5.** How many arbitrary constants does the particular solution of a third-order differential equation contain? [3 marks]

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**Q6.** Find a particular solution of  $x^2 dy + (xy + y^2)dx = 0$ , given  $y=1$  when  $x=1$ . [6 marks]

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**Q7.** Find a particular solution of  $dy/dx + 2y \tan x = \sin x$ , given  $y=0$  when  $x=\pi/3$ . [6 marks]

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**Q8.** In a bank, principal increases continuously at the rate of 5% per year. An amount of Rs 1000 is deposited with this bank. How much will it be worth after 10 years ( $e^{0.5}=1.648$ )? [5 marks]

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