

MTH401

Differential Equations

Formula Sheet

1 Chapters, 22 Formulas

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$$ax^2+bx+c$$

$$ax^2+bx+c=0$$

$$ax^3+bx^2+cx+d$$

$$ax^3+bx^2+cx+d=0$$

$$\cdot p(t)$$

$$\cdot p(t) = 10a / (10b + (a - 10b)e^{-a(t-t_0)})$$

$$\cdot x'' + (a/m)x' + (k/m)x$$

$$\cdot x'' + (a/m)x' + (k/m)x = g + (F(t)/m)$$

$$y'' + 9y$$

$$y'' + 9y = \sin(t)$$

$$\cdot \text{with initial conditions } y(0)$$

$$\cdot \text{with initial conditions } y(0) = 1, y'(2\pi) = -1$$

$$\cdot y(t)$$

$$\cdot y(t) = (1/8) \sin(t) + \cos(3t) + \sin(3t)$$

$$y'' + p^2y$$

$$y'' + p^2y = 0$$

$$\cdot \text{with initial conditions } y(0)$$

$$\cdot \text{with initial conditions } y(0) = 2, y(1) = -2$$

$$\cdot y(t)$$

$$\cdot y(t) = 2\cos(pt) + (c)\sin(pt)$$

$$\cdot a_n(t)y(n) + a_{n-1}(t)y(n-1) + \dots + a_1y' + a_0(t)$$

$$\cdot a_n(t)y(n) + a_{n-1}(t)y(n-1) + \dots + a_1y' + a_0(t)y = h(t)$$

$$x^3(y''')^3 - x^2y(y'')^2 + 3xy' + 5y$$

$$x^3(y''')^3 - x^2y(y'')^2 + 3xy' + 5y = e^x$$

$$(1 - y/x)$$

$$(1 - y/x) = xc$$

$$xy - 3x + 4y$$

$$xy - 3x + 4y = C$$

$$f(x, y)$$

$$f(x, y) = e + y$$

$$= 2[x \ln x - x]$$

$$x D$$

$$x D = - = -$$

, we have: $x D$

$$, \text{ we have: } x D = , 2$$

and in case of 2nd possibility we write R

and in case of 2nd possibility we write $R = .$

$$k$$

$$k = n \quad k = n - 2 \quad k = n \quad k = n$$

When k

When $k = 0$ in equation (14) we have $2 + 0$

$$= -, \text{ we have}$$

Good Luck!

Keep practicing!