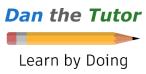
### AP Calculus AB - Unit 6



#### **Problem Set 36: Differential Equations**

What is the order of the differential equation (first order, second order, etc.)?

1. 
$$y - x^2 = \frac{d^2y}{dx^2} + y^3$$

$$2. \quad y' + 2\sqrt{xy} = 6y'''$$

Find the particular solution for the differential equation.

3. 
$$\frac{dy}{dx} = 2x + 2$$
;  $y(0) = 4$ 

4. 
$$\frac{dy}{dx} = \frac{xy}{3}$$
;  $y(3) = 1$ 

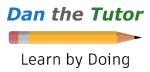
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5. 
$$y' = \frac{x^2}{y^2}$$
;  $y(1) = 2$ 

6. 
$$\frac{dy}{dx} = \frac{\sin x}{y} \; ; \; y(\pi) = 2$$

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7. 
$$y' = y^2 + 1$$
;  $y\left(\frac{\pi}{4}\right) = 1$ 

8. 
$$\frac{dy}{dx} = \frac{4xy}{x^2 + 2}$$
;  $y(0) = 4$ 

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9. 
$$\frac{d^2y}{dx^2} = x + 2$$
;  $y'(2) = 0$ ,  $y(-1) = 2$ 

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10. 
$$y'' + x^2 = 2\sqrt{x}$$
;  $y'(1) = 1$ ,  $y(0) = 4$