Learning outcomes

After completing this section, you will inshaAllah be able to

- 1. know basic rules for differentiation
- 2. know and use the power rule formula for differentiation
- 3. find derivatives of functions involving exponential function e^x
- 4. apply derivatives to study tangent lines

How do we find derivatives practically?

By a combination of rules and formulas

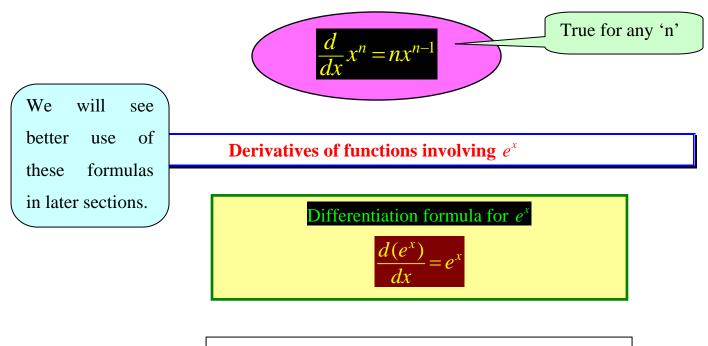
Rules set # 1

•
$$\frac{d}{dx}(c) = 0$$

•
$$\frac{d}{dx}(c \cdot f(x)) = c \cdot \frac{d}{dx}(f(x))$$

•
$$\frac{d}{dx}(f(x)\pm g(x)) = \frac{d}{dx}(f(x))\pm \frac{d}{dx}(g(x))$$

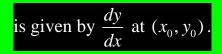




See examples 1, 2, 3 done in class

Application: Slopes and tangent lines

- Recall the following facts from Chapter 2.
 - Slope of a curve at a point = slope of tangent line at that point
 - Slope of tangent line to curve y = f(x) at (x_0, y_0)



See examples 4, 5, 6, 7, 8, 9 done in class

End of 3.1