Calculus, 2016-1-IE-2

Name: **Sequence Number:**

1°). Describe **Fundamental Theorems of Calculus**.(10%)

2°). Evaluate the following Integrations: (total 80%, each 10% (×8))

a°). $\int (3x - 2)dx$ b°). $\int \frac{x^2+3}{x} dx$ c°). $\int (\cos 2x + \sin x)dx$

d°). $\int_0^4 \sqrt{16 - x^2}\, dx$ e°). $\int x \cos 2x dx$ f°). $\int \sin^2 x \cos^2 x dx$

g°). $\int_0^{\pi/4} \tan^2 x dx$ h°). $\int \frac{dx}{4-x^2}$

3°). (total 10%) Evaluate the derivative

$$\frac{d}{dx} \int_{3x}^{2x} \frac{t^2}{\sin t + \cos 2t} dt$$