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| **Ministry Of Higher Education**<br>**Pyramids Higher Institute of Engineering And Technology**<br>**Department of Basic Science** | معهد الأهرامات العالى للهندسة والتكنولوجيا<br>P.H.I For Engineering and Technology | **Prep. Year: Mid-Term Exam**<br>**Math. I Code: BAS 013 A**<br>**Date: March 28, 2015**<br>**Time Allowed: 1 Hour** |

| | Marks |
|---|---|
| **ممنوع** إستخدام المحمول كألة حاسبة. يُسمح **فقط** بإستخدام الألة الحاسبة العادية<br>Do not use Mobile as Calculator. Only use Calculator | 15 |

[1]Find $\mathbf{y`}$ from the following: 6

(a) $y = 2x^4 + 3\cos x$ (b) $y = x^{-3} + \sin 2x$ (c) $y = (x + \tan x)^4$

(d) $y = \sec x^2 + \sin^2 x$ (e) $y = \sqrt{x}.\tan^{-3} x$ (f) $y = \frac{x+\cos x}{x+\tan x}$

[2]Find the limits: 4

(a) $\lim_{x\to 1} \frac{\sqrt{x}-3}{x^2-2}$ (b) $\lim_{x\to 1} \frac{x^2-2x+1}{x^2+2x-3}$ (c) $\lim_{x\to 0} \frac{x-\sin x}{x-\tan x}$ (d) $\lim_{x\to\infty} \frac{x^4-1}{x^2+x^5}$

[3](a) Determine maximum and minimum points of : $(x) = x^3 - 12x$. 3

(b) Write the Maclurin's expansion of the function: $f(x) = x + \frac{1}{x+1}$ 2

*Good Luck* *Dr. Mohamed Eid*