Course Code:	BIPH 1307	**UNIVERSITY OF PALESTINE**	**Instructor Name:** _____
Course Title:	Applied math		**Section No.:** _____
Due:	Nov-2018		Student No.: _____
No. of Questions:	(4 FOUR)		Student Name: _____
Time:	(1Hour)	Second Exam	College Name: Pharmacy
Using Calculator	(**Yes**)	Grade 30/2	Using Dictionary (No)
		First semester 2018/2019	

QUESTION 1 (8 points)

1. Compute the following limits

a) $\lim_{u \to \infty} \left(\frac{2u^2 + 1}{3u^2 + 1} \right)$

b) $\lim_{\theta \to 0} \frac{\left(1 - \cos(\theta)\right)}{\theta^2}$

2. Find the constants ***a*** and ***b*** such that
the function *f*(x) is continuous for all x in R.

$$f(x) = \begin{cases} x^3 & x < -1 \\ ax + b & -1 \le x < 1 \\ x^2 + 2 & x \ge 1 \end{cases}$$

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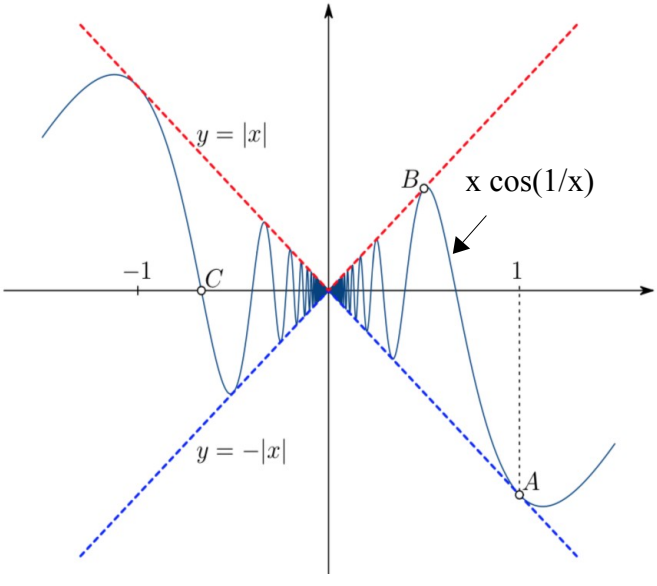
3. Read the figure on the right and use the sandwich theorem to compute the limit of the function

$$f(x) = x\cos\left(\frac{1}{x}\right) \quad \text{as x} \to \text{Zero}$$



QUESTION 2 (8 points)

1. Use the definition of derivatives to differentiate the function

$$f(x) = \frac{1}{\sqrt{x}} \text{ , then find } f'(2)$$

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2. Compute $f'(x)$ if $f(x) = \left(e^{\pi^2}+2x^3\right)^4 + \sin^3\left(\frac{1}{x}\right) + e^{x^2} + \ln\left(\frac{x^2}{x+2}\right)$

3. If $f(x) = x^2 + 1$ and $g(x) = |x - 4|$, then find $(f \circ g)'(4)$.

4. Given that $y = f(2x^2 + 3)$, Find the derivative $y'(x)$ at the points x where $f'(11) = 12$

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QUESTION 3 (7 *points*)

1. Compute $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ if $y^2 - 2x = 1 - 2y$

2. Verify that the point (2, 3) is on the curve $x^2 + xy - y^2 = 1$.
Then find the equations of the tangent and normal lines to the curve at the point given above.

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QUESTION 4 (7 points)

1. Find all asymptotes of the function $f(x) = \dfrac{1}{\sqrt{\dfrac{x}{x+1}}}$

2. Find if existed the critical points, the domain end points, then identify the extreme values as absolute or local maximum or minimum, for the function $f(x) = x^2\sqrt{3-x}$

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