

Egyptian Korean Faculty of Technological Industry and Energy

Program of renewable energy



Mathematics

First year students Final exam		Date: Time:
Name:	ID Number:	
Q(1): Choose the correct answer:		Score:
1- If $y = \cos(2x)$, then $\frac{dy}{dx} =$		
$\frac{dx}{2x^2-2\sin 2x}$ b) $2\sin 2x$		1) 2-
2- If $y = \cot(x)$, then $\frac{dy}{dx} = \dots$		$1) - 2\cos x$
a) $-\csc^2(x)$ b) $-\csc(x)$		$\frac{2}{2}(\mathbf{x})$
3- If $y = \sin^2(2x)$, then $\frac{dy}{dx} = .$		$\frac{d}{d}$ -co
a)2sin2x(cos2x)2 b)4sin2x (cos2x)2		1)2:://
4- If $y = sin^{-1}(x)$, then $\frac{dy}{dx} = \frac{1}{2}$		1)2SIn(x) cos(
1 1		d) -1
a) $\frac{1}{\sqrt{1-x^2}}$ b) $\frac{-1}{\sqrt{1-x^2}}$	$\sqrt{1-2x}$	$d)\frac{-1}{\sqrt{1-2x}}$
5- If $y = tan^{-1}(e^{x^3})$, then $\frac{dy}{dx}$		1
$a)\frac{1}{1+x^3}$ b) $\frac{-1}{\sqrt{1-x^3}}$ c) $\frac{1}{1+x^3}$	$\frac{1}{(e^{x^3})^2} d$ $\frac{1}{1+(e^{x^3})^2} d$	$(e^{x^3})^2 \cdot e^{x^3}$
6- If $y = x^3 \sin^{-1}(x)$, then $\frac{dy}{dx} =$		
4		1
a) $x^3 \cdot \frac{1}{1 + x^2}$	b) x^3 .	$\sqrt{1-x^2}$
c) $3x^2 \sin^{-1}(x) - 3x^2 \frac{1}{\sqrt{1-x^2}}$	$d) 3x^2 \sin^{-1}(x)$	$) + x^3 \frac{1}{\sqrt{1-x^2}}$
7- If $y = 6x^3 - 9x + 4$, then $\frac{d}{d}$	$\frac{y}{x} = \dots$	
$a) 18 y - 9 b) 20 x^2 + 9$	c) $18x^2 +$	9 0) 18)
8- If y=2t ⁴ -10t ² +13, then	$\frac{dy}{dx} = \dots$	
8t'-20t		



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a) 8t ² -20t+13	b) 8t3-2t+13	c) 8t3+20t	d) 8t3-20t
	da	Name of Street or other Parks	

9- If
$$y = x(3x^2-9)$$
, then $\frac{dy}{dx} = \dots$

30.4	dx		- 2 0
a) 9x -9	b) $9x^3 - 9$	-10.2 G	$d) 9x^2 - 9$
u/on o	0/37 -9	c) 6x ² -6	

10- If
$$y = x^3 \tan x$$
, then $\frac{dy}{dx} = \dots$

a)
$$X^3 \sec^2 x$$
 b) $3x^2 \tan x$
c) $X^3 \sec^2 x + 3x^2 \tan x$ d) $X^3 \sec x + 3x^2 \tan x$

11- If
$$y = (\sin x)^{-1}$$
, then $\frac{dy}{dx} = \dots$

	,	(0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	dx		d) -(sinx)-1 .(cosx)
a) Cos	s x	by -cos x	c) -	(sinx)-2 (cosx)	u) =(sitte)

12- The domain of the function
$$y = x^2 - 4$$
 is......

12-	The domai	n of the function y	= X - 7 13.77.77	
a) i	$R - \{-4\}$	$b) R - \{4\}$	c) R	d) ∞

The range of the function $y = \frac{1}{x+2}$ is...... 13-

		7.0	4) ~
10	L D (2)	$R - \{0\}$	(a) w
a) R	b) $R - \{2\}$	W (0)	

14- The domain of the function
$$y = (x-2)^3 + 1$$
 is......

577 B			1 ~
	$R - \{2\}$	c) $R - \{-2\}$	1 010
-\ D	P = 171	$C \cap K = \{-4\}$	
a) R	1011	0) 1.	-
4) 1		1	

The range of the function $y = 1-2^x$ is...... 15-

10			(0)	1 4/ ~
1	1-∞,15	b) R	c) $R - \{2\}$	d) ∞
1 1	1-00 . 11	0)		

16- The domain of the function
$$y = \ln x$$
 is......

10-	the dom			a n ∞
	101	b)]-∞, 0[c) R	<u></u>
(a)	$[0, \infty[$	0) 1-35, 51		

$$17$$
- Ln $(\frac{x}{y}) = \dots$

a)
$$\ln x - \ln y$$
 b) $\ln x + \ln y$ c) $\ln (xy)$ dy 1

$$\frac{x}{\sqrt{28}}$$
 The function $f(x) = \begin{cases} \frac{x^2 - 4}{x - 2} & x \neq 2 \text{ is continuous at } x = 2. \\ x = 2 & x = 2. \end{cases}$

b) False

$$19- \lim_{x\to 0} \frac{\sin 2\sqrt{x}}{\sqrt{x}} = \dots$$

(a) 1 (b) 2 (c) 3 (d) 4 (20) The function
$$f(x) = \sqrt[3]{x} + |x|$$
 is continuous at $x = -8$.

$$20- The function f(x) = \sqrt{x + |x|}$$
 is continuous at $x = -6$.

21- The amplitude of the function
$$f(x) = -4 \tan 3x$$
 is.



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254	M	athematics	GENERALITY TENSORITY
22- Th			The state of the s
The	e period of the fun	Ction 6	(b)
a	e period of the fundable b) $\frac{\pi}{3}$	f(x) = 3	$\sin x$ is
23- lim	b) $\frac{\pi}{2}$	c)	TT
23- 11m	$x \to \infty \left(1 + \frac{1}{x}\right)^x$ is		# 2π
a) 0	h)		
24- lim	b) ∞	c) 1	øl e
24° lim	$x \to -3 = \frac{x^2 + x - 6}{x + 3}$ is		y () e
a) 0	9) 55		
25- lim		f) -∞	g)-5
25 tim	$x \to 1 \frac{x^3 - 1}{x - 1}$ is	*******	
<u>a)</u> 1	b) 2	2)2	
26- lim,	$x^2 + x - 12$.	c) 3	d) 0
/a	$\frac{x^2 + x - 12}{x - 3}$ is		
a) /	b) 0	c)∞	10.45
27- Sinh	2x =	1 0,00	d) 12
a) Cosh 2x	-1 b)1		
	$s^2x - 1 = \dots$	c) 2 sinh x c	$\cosh x$ d) $\cos^2 x$
		•••••	
a) Cos 2x	b) Sin 2x	c) $2sin^2x$	$d) 2cos^2x$
29- sin^2	$x + cos^2 x = \dots$,	4) 2005 X
a) 1	b) Cos 2x	c) $2\sin^2 x$	4/0 2
30- The a		function C()	d) Cos 2x
a) -2	2m	function $f(x)$	$= -2\cos 3x \text{ is}$
a) -2	b) $\frac{2\pi}{3}$	Ø12	$d)^{\frac{\pi}{n}}$
	3		3