جامعة الملك عبدالعزيز.

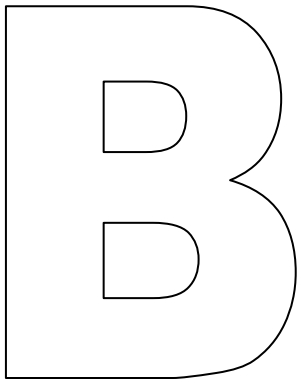
كلية العلوم. الاسم:_____

قسم الرياضيات. الرقم الجامعي:_____

math 202.
Calculus 2.

First Exam

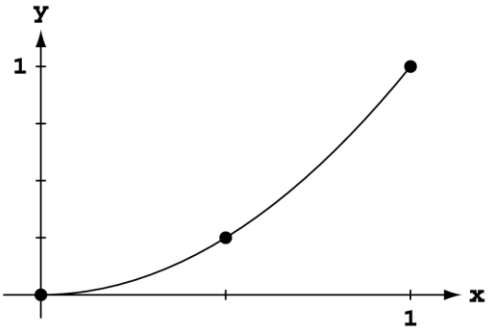
Date: Saturday 22 / 11 / 1431.
Time: from 21:00 to 22:30.



- تأكد من أن رمز نموذج الإجابة لديك هو B .
- أكتب اسمك على هذا النموذج ثم تأكد من تعبئة جميع بيانات نموذج الإجابة خاصة رقمك الجامعي **بقلم الرصاص**.
- تأكد من تعبئة نموذج الحضور بصورة صحيحة.
- أجب عن جميع الأسئلة الآتية بتظليل الخيار الصحيح في نموذج الإجابة **بقلم الرصاص**.
- ممنوع استخدام الآلة الحاسبة.

Q1.

The upper sum with two rectangles of equal width of $f(x) = x^2$ between $x = 0$ and $x = 1$ is



(A)	(B)	(C)	(D)
$\left(\frac{1}{2}\right)^2$	$\frac{1}{2}\left(\left(\frac{1}{2}\right)^2\right)$	$\left(\left(\frac{1}{2}\right)^2 + 1^2\right)$	$\frac{1}{2}\left(\left(\frac{1}{2}\right)^2 + 1^2\right)$

Q2.

Suppose that $\sum_{k=1}^{n} a_k = -5$ and $\sum_{k=1}^{n} b_k = 6$. Then $\sum_{k=1}^{n}(b_k - 2a_k) =$

(A)	(B)	(C)	(D)
4	-4	-16	16

Q3.

$\sum_{k=1}^{7} k^2 =$

(A)	(B)	(C)	(D)
$\frac{9\,(10)\,(19)}{6}$	$\frac{8\,(9)\,(17)}{6}$	$\frac{7\,(8)\,(15)}{6}$	$\frac{6\,(7)\,(13)}{6}$

Q4.

If $2 \le g(x) \le 7$ for each $x \in [\,2\,,5\,]$ and g is continuous on $[\,2\,,5\,]$, then

(A)	(B)	(C)	(D)
$\int_2^5 g(x)dx \le 5$	$6 \le \int_2^5 g(x)dx \le 21$	$-5 \le \int_2^5 g(x)dx \le 5$	$22 \le \int_2^5 g(x)dx \le 55$

Q5.

If g is an even function and $\int_{-3}^{3} g(x)dx = 6$, then $\int_0^3 \frac{g(x)}{3}\,dx =$

(A)	(B)	(C)	(D)
3	$\frac{1}{2}$	1	$\frac{1}{3}$

Q6.

If $g(x) = \int_0^x 3t^2 dt$ for each $x \in [\,1\,,9\,]$, then $g'(1) =$

(A)	(B)	(C)	(D)
3	12	6	4

Q7.

If $f'(x) = g(x)$, for each x , then $\int g(x)dx = f'(x) + C$, where C is constant.

(A)	(B)
TRUE	FALSE

Q8.

$\frac{d}{dx}\left(\int_0^{x^2} \frac{1}{1+t^2}\ dt\right) =$

(A)	(B)	(C)	(D)
$\frac{2t}{1-\ t^4}$	$\frac{2x}{1-\ x^4}$	$\frac{2t}{1+t^4}$	$\frac{2x}{1+x^4}$

Q9.

If f is integrable on $[\ a\ ,b\ ]$, then the answer of $\int_a^b f(x)dx$ is a function

(A)	(B)
TRUE	FALSE

Q10.

$$\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} x^8 \sin x \ dx =$$

(A)	(B)	(C)	(D)
$\frac{2\pi}{3}$	$-\frac{3\pi}{2}$	0	$\frac{2\pi}{3}$

Q11.

$\int x^2 \cos(x^3)\, dx =$

(A)	(B)	(C)	(D)
$-\frac{1}{3}\sin(x^3) + C$	$\frac{1}{3}\sin(x^3) + C$	$-\frac{1}{3}\cos(x^3) + C$	$\frac{1}{3}\cos(x^3) + C$

Q12.

The indefinite integral $\int \tan x \sec^2 x\ dx$ has two different correct answers. They can be obtained by substitution

(A)	(B)	(C)	(D)
$u = \tan x$ and $u = \sec x$	$u = \tan x$ and $u = \sec^2 x$	$u = \tan x$ and $u = \sec x \tan x$	$u = \tan x$ and $u = x$

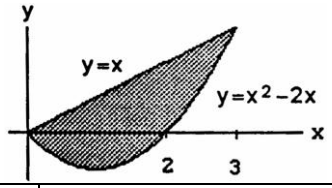
السؤال رقم 13 هو تكرار للسؤال رقم 12 و يجب أن تجيب عليه للحصول على درجته

Q13.

The indefinite integral $\int \tan x \sec^2 x\ dx$ has two different correct answers. They can be obtained by substitution

(A)	(B)	(C)	(D)
$u = \tan x$ and $u = \sec x$	$u = \tan x$ and $u = \sec^2 x$	$u = \tan x$ and $u = \sec x \tan x$	$u = \tan x$ and $u = x$

Q14. The area of the region between the curves of $f(x) = x$ and $g(x) = x^2 - 2x$ is



(A)	(B)	(C)	(D)
$\frac{7}{2}$	$-\frac{11}{2}$	$\frac{11}{2}$	$\frac{9}{2}$

السؤال رقم 15 هو تكرار للسؤال رقم 14 و يجب أن تجيب عليه للحصول على درجته

Q15. The area of the region between the curves of $f(x) = x$ and $g(x) = x^2 - 2x$ is

(A)	(B)	(C)	(D)
$\frac{7}{2}$	$-\frac{11}{2}$	$\frac{11}{2}$	$\frac{9}{2}$

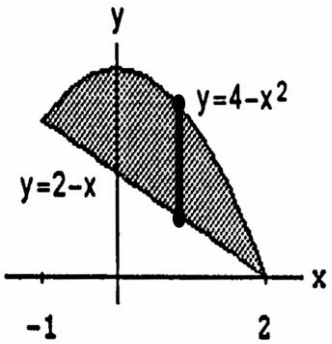
Q16. $\int \theta \sqrt[4]{1-\theta^2}\, d\theta =$

(A)	(B)	(C)	(D)
$-\frac{4}{5}(1-\theta^2)^{\frac{5}{4}} + C$	$\frac{4}{5}(1-\theta^2)^{\frac{5}{4}} + C$	$-\frac{2}{5}(1-\theta^2)^{\frac{5}{4}} + C$	$\frac{2}{5}(1-\theta^2)^{\frac{5}{4}} + C$

Q17. If f is negative and continuous on $[a, b]$, then $\int_a^b f(x)dx$ means the area of the region bounded by the curve of f and the x-axis between the vertical lines $x = a$ and $x = b$.

(A)	(B)
TRUE	FALSE

Q18. The volume of the solid generated by revolving the region bounded by curve $y = 4 - x^2$ and the line $y = 2 - x$ about the x-axis is



(A)	(B)	(C)	(D)
$\frac{108\pi}{5}$	$\frac{110\pi}{5}$	$\frac{112\pi}{5}$	$\frac{114\pi}{5}$

السؤال رقم 19 هو تكرار للسؤال رقم 18 و يجب أن تجيب عليه للحصول على درجته

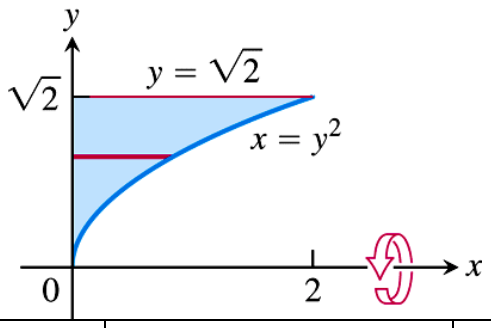
Q19.

The volume of the solid generated by revolving the region bounded by curve $y = 4 - x^2$ and the line $y = 2 - x$ about the x-axis is

(A)	(B)	(C)	(D)
$\frac{108\pi}{5}$	$\frac{110\pi}{5}$	$\frac{112\pi}{5}$	$\frac{114\pi}{5}$

Q20.

By using the shell method, the volume of the solid generated by revolving the shaded region bounded by the lines $y = \sqrt{2}$, y-axis and the curve $x = y^2$ about the x-axis is



(A)	(B)	(C)	(D)
3π	2π	π	$\frac{\pi}{2}$

السؤال رقم 21 هو تكرار للسؤال رقم 20 و يجب أن تجيب عليه للحصول على درجته

Q21.

The volume of the solid generated by revolving the shaded region bounded by the lines $y = \sqrt{2}$, y-axis and the curve $x = y^2$ about the x-axis is

(A)	(B)	(C)	(D)
3π	2π	π	$\frac{\pi}{2}$

Q22.

The integral for the length of the curve $y = \tan x$, $-\frac{\pi}{3} \le x \le 0$ is

(A)	(B)	(C)	(D)
$\int_{-\frac{\pi}{3}}^{0} \sqrt{2\sec^4 x}\ dx$	$\int_{-\frac{\pi}{3}}^{0} \sqrt{1 + \sec^2 x \tan^2 x}\ dx$	$\int_{0}^{\frac{\pi}{3}} \sqrt{1 + \sec^4 x}\ dx$	$\int_{-\frac{\pi}{3}}^{0} \sqrt{1 + \sec^4 x}\ dx$

Use the following formulas to solve Questions 23, 24, and 25. Note that the density function is $\delta(x)$	استخدم القوانين التالية لحل الأسئلة 23 و 24 و 25: الدالة التي تعطي الكثافة هي $\delta(x)$

Moment about the origin along the x-axis: $M_0 = \int_a^b x\delta(x)dx$

Mass along the x-axis: $M = \int_a^b \delta(x)dx$

Center of mass along the x-axis: $\bar{x} = \frac{M_0}{M}$

Q23.

If the density of a thin rod is given by $\delta(x) = 1 + \frac{x}{3}$, where the rod is lying along the interval $[0\,,3]$ of the x-axis, then the moment M_0 about the origin is

(A)	(B)	(C)	(D)
$\frac{15}{2}$	$\frac{17}{2}$	$\frac{19}{2}$	$\frac{21}{2}$

Q24.

If the density of a thin rod is given by $\delta(x) = 1 + \frac{x}{3}$, where the rod is lying along the interval $[0\,,3]$ of the x-axis, then the mass M is

(A)	(B)	(C)	(D)
$\frac{9}{2}$	$\frac{11}{2}$	$\frac{13}{2}$	$\frac{15}{2}$

Q25.

If the density of a thin rod is given by $\delta(x) = 1 + \frac{x}{3}$, where the rod is lying along the interval $[0\,,3]$ of the x-axis, then the center of mass $\bar{x}$ is

(A)	(B)	(C)	(D)
$\frac{5}{3}$	$\frac{17}{11}$	$\frac{19}{13}$	$\frac{21}{15}$