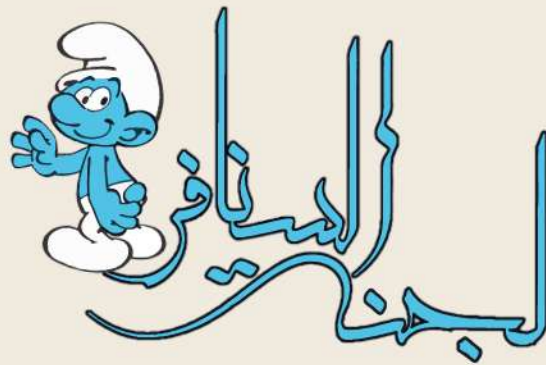


خدمتكم طريق خضناه لرضى الله

2021

أسئلة سنوات فاينال كالكولاس 101



سنافر البوليتكنك f

بسم الله الرحمن الرحيم

نقدم لكم نحن أسرة فريق
(لجنة السنافر)

مجموعة أسئلة اختبارات إلكترونية تم تجميعها خلال الفصول الماضية
سائلين المولى أن يوفقنا وإياكم لكل خير

تنويه

يوجد بعض الأسئلة عليها إجابات قد تحتل الصواب وقد تحتل الخطأ
فإن أصبنا فما هو إلا توفيق من الله
وإن أخطأنا فمن أنفسنا

#خدمتكم_طريق_خضناه_لرضى_الله

#الإتجاه_الاسلامي

#بسواعدنا_نبنيها

#لجنة_السنافر

#هي_الله

$$\int x(1-x)^{99} dx =$$

Select one:

☐

a. $\frac{(1-x)^{101}}{101} + c$

☐

b. $-\frac{(1-x)^{100}}{100} + c$

☐

c. $\frac{(1-x)^{100}}{100} - \frac{(1-x)^{101}}{101} + c$

☐

d. $\frac{(1-x)^{101}}{101} - \frac{(1-x)^{100}}{100} + c$

$$\int \frac{dx}{(9x^2+6x+1)^2} =$$

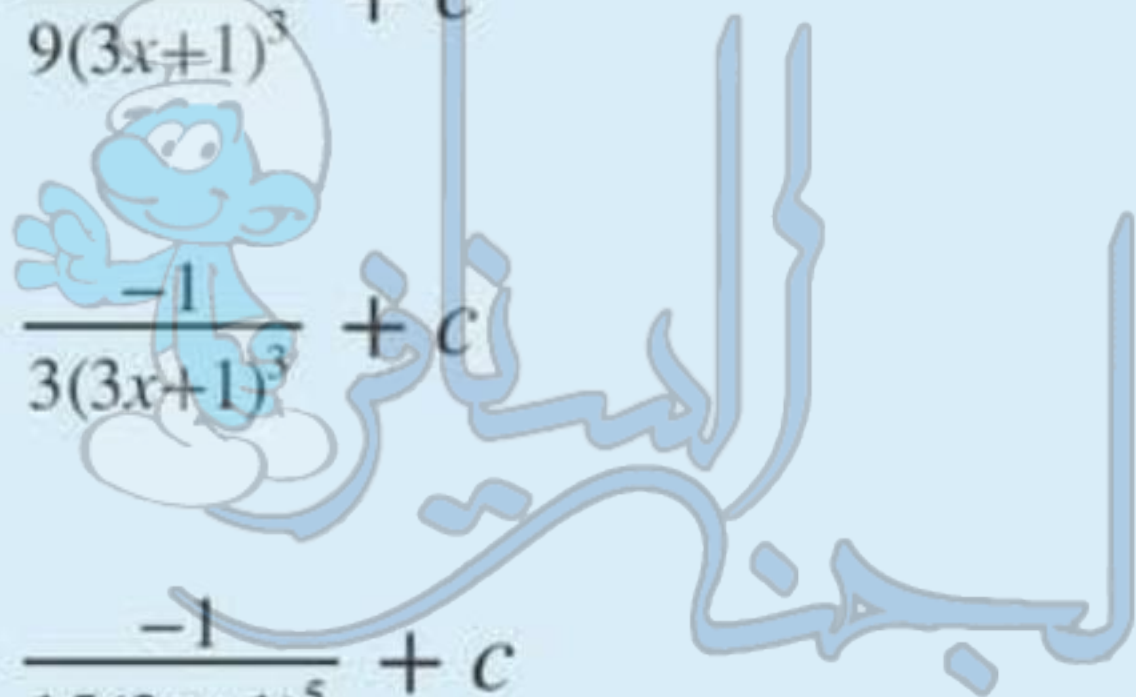
Select one:

☐ $\frac{-1}{9(3x+1)^3} + c$

☐ $\frac{-1}{3(3x+1)^3} + c$

☐ $\frac{-1}{15(3x+1)^5} + c$

☐ $\frac{-1}{27(3x+1)^3} + c$



The maximum value for the integral

$$\int_0^2 \sqrt{x^3 + 2} dx \text{ is}$$

Select one:



$$2\sqrt{2}$$



$$0$$



$$2\sqrt{12}$$



$$2\sqrt{10}$$



The maximum value for the integral

$$\int_0^3 \sqrt{x^3 + 3} dx \text{ is}$$

Select one:



0



$3\sqrt{30}$



$3\sqrt{32}$



$3\sqrt{3}$



$$\int \frac{dx}{(4x^2+4x+1)^2} =$$

Select one:

☐ $\frac{-1}{10(2x+1)^5} + c$

☐ $\frac{-1}{3(2x+1)^3} + c$

☐ $\frac{-1}{12(2x+1)^3} + c$

☐ $\frac{-1}{6(2x+1)^3} + c$

Given that $f'(6) = 3$, $g'(1) = 6$
and $g''(1) = 4$ then

$$(f \circ g')'(1) =$$

Select one:

☐ a. 30

☐ b. 18

☐ c. 15

☐ d. 12

The natural domain of the function

$$f(x) = \frac{2\sqrt{x-2}}{\sqrt{x-2}}$$

is:

Select one:

☒ a. $(2, \infty)$

☐ b. $[2, \infty)$

☐ c. \mathbb{R}

☐ d. $\mathbb{R} \setminus \{2\}$

Compute the following integral:

$$\int \sin 5x \cot 5x dx =$$

Select one.

☐ a. $-\sin 5x + c$

☐ b. $-\frac{1}{5}\sin 5x + c$

☐ c. $\sin 5x + c$

☒ d. $\frac{1}{5}\sin 5x + c$

Evaluate:

$$\int_{-1}^1 \frac{x^3}{x^4 + \cos x} dx =$$

Select one:

- ☐ a. 4
- ☐ b. 1
- ☒ c. 0
- ☐ d. 2

الاجابة الصحيحة هي 0

Evaluate the following integral:

$$\int \frac{dx}{4x^2+12x+9} =$$

Select one:

☐ a.

$$\frac{1}{2x+3} + c$$

☐ b.

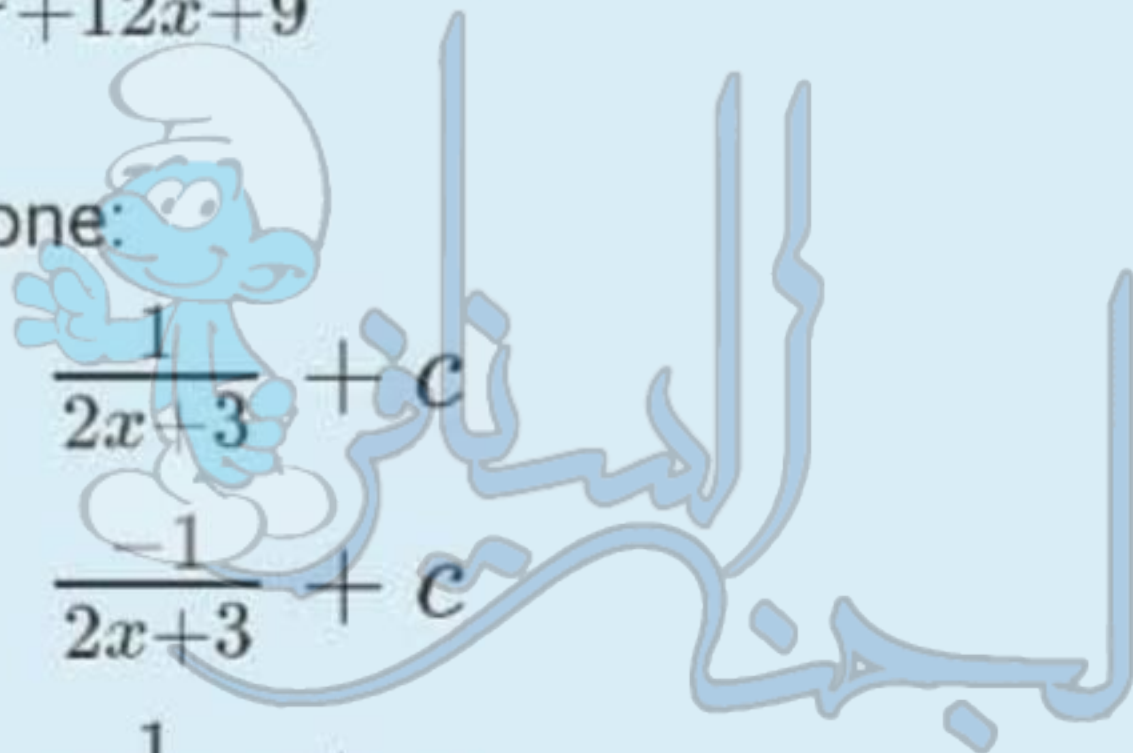
$$\frac{1}{2x+3} + c$$

☒ c.

$$\frac{1}{4x+6} + c$$

☐ d.

$$\frac{-1}{4x+6} + c$$

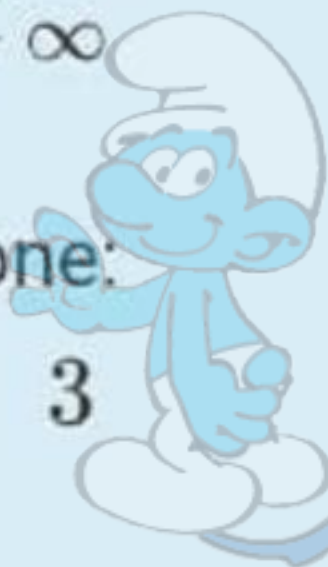


Evaluate the following limit:

$$\lim_{x \rightarrow -\infty} \frac{\sqrt{x^2 + x + 1} - 5x}{2x} =$$

Select one:

- ☐ a. 3
- ☐ b. $-\infty$
- ☐ c. ∞
- ☒ d. -3

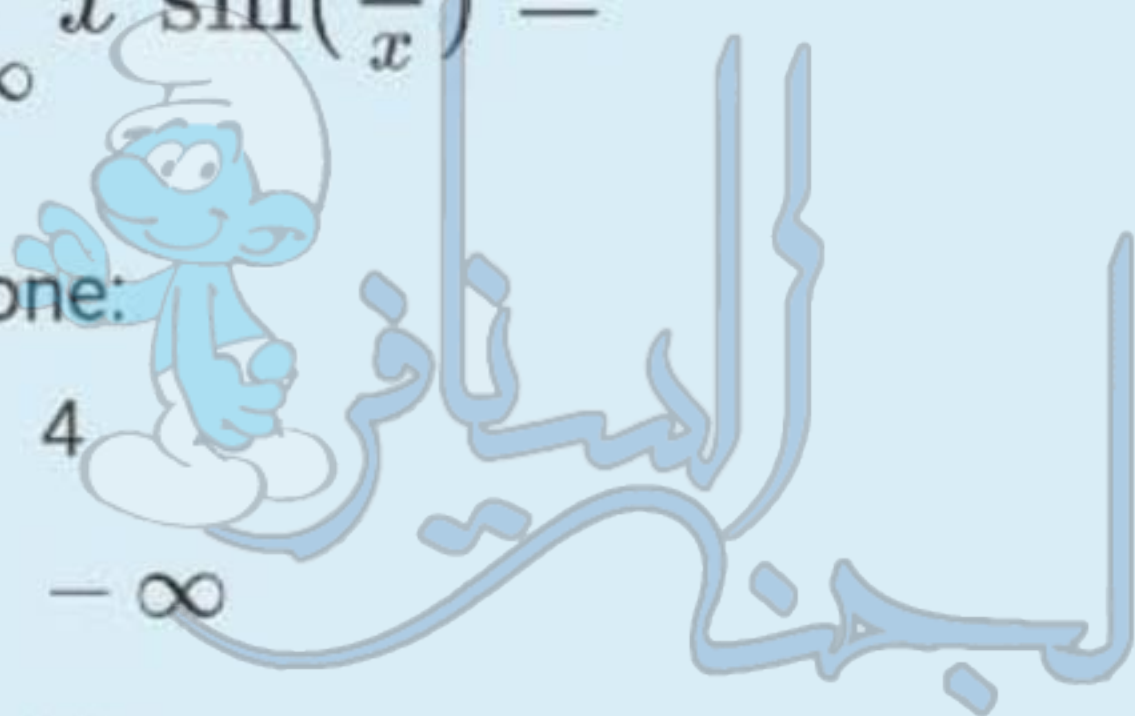


Evaluate the following limit:

$$\lim_{x \rightarrow \infty} x \sin\left(\frac{4}{x}\right) =$$

Select one:

- ☐ a. 4
- ☐ b. $-\infty$
- ☒ c. ∞
- ☐ d. 0



Given that $f(x) = x^4 + 16x + 1$
then

$$\lim_{h \rightarrow 0} \frac{f(1+3h) - f(1)}{4h}$$

Select one:

- ☐ a. 30
- ☐ b. 12
- ☐ c. 15
- ☐ d. 6

Given that $f(x) = \frac{x}{x-3}$ is a 1-1 function then
 $f^{-1}(x) =$

Select one:

☐ a.

$$\frac{x}{x-3}$$

☐ b.

$$\frac{x}{x+3}$$

☐ c.

$$\frac{3x}{x+1}$$

☐ d.

$$\frac{3x}{x-1}$$



If $y = x^\lambda$ satisfies the differential equation :

$$x^2 y'' - 12y = 0, x > 0$$

then the set of all possible values of λ is:

Select one:

- ☐ a. $\{3, -4\}$
- ☐ b. $\{-3, -4\}$
- ☐ c. $\{3, 4\}$
- ☐ d. $\{-3, 4\}$

Given that, $\lim_{x \rightarrow 1^+} f(x) = 10$,

$$\lim_{x \rightarrow 1^-} f(x) = 16 \text{ and } f(1) = 4$$

then

$$\lim_{x \rightarrow 5^+} f(6 - x) =$$

Select one:

- ☐ a. 8
- ☐ b. 10
- ☐ c. does not exist
- ☐ d. 16

The area of the surface generated by revolving the line segment

$$y = \sqrt{3}x + 1, \quad 0 \leq x \leq 2$$

about the x-axis is given by :

Select one:

☐ a. $4\pi \int_0^2 (\sqrt{3}x + 2) dx$

☐ b. $4\pi \int_0^2 (\sqrt{3}x + 1) dx$

☐ c. $2\pi \int_0^2 (\sqrt{3}x + 2) dx$

☐ d. $2\pi \int_0^2 (\sqrt{3}x + 1) dx$

If f is a continuous function then:

$$\int_0^8 \frac{f(x)}{f(x) + f(8-x)} dx =$$

Select one:

- ☐ a. 3
- ☐ b. 5
- ☐ c. 4
- ☐ d. 2

Evaluate the following integral:

$$\int \frac{dx}{4x^2 + 12x + 9} =$$

Select one:

- ☒ a. $\frac{1}{4x+6} + c$
- ☐ b. $\frac{1}{2x+3} + c$
- ☐ c. $\frac{-1}{2x+3} + c$
- ☐ d. $\frac{1}{4x+6} + c$

Evaluate the following limit:

$$\lim_{x \rightarrow 2} \frac{6x-12}{2-x} =$$

Select one:

- ☐ a. 0
- ☐ b. does not exist
- ☐ c. 6
- ☒ d. -6

Evaluate the following integral:

$$\int 4x^3 \sec^2 x^4 dx =$$

Select one:

- ☒ a. $\tan x^4 + c$
- ☐ b. $-4 \tan x^4 + c$
- ☐ c. $-\tan x^4 + c$
- ☐ d. $4 \tan x^4 + c$

Achieve the following integral:

$$\int \csc x \cot x dx =$$

Select one:

- ☐ a. $\csc x + c$
- ☒ b. $-\csc x + c$
- ☐ c. $\csc x \tan x + c$
- ☐ d. $-\csc x \cot x + c$

The function $f(x) = \sqrt{x^2 - 9}$ is decreasing on

Select one:

- ☐ a. $(-\infty, 0]$
- ☐ b. $[0, \infty)$
- ☐ c. $[3, \infty)$
- ☒ d. $(-\infty, -3]$

The range of the function

$$f(x) = \begin{cases} 0 & , x \leq -2 \\ \sqrt{4 - x^2} & , -2 < x < 2 \\ 9 & , x \geq 2 \end{cases}$$

is:

Select one:

- ☐ a. $[0, 2]$
- ☐ b. $(0, 2)$
- ☐ c. $[0, 2) \cup \{9\}$
- ☒ d. $[0, 2] \cup \{9\}$

Evaluate the following limit:

$$\lim_{x \rightarrow -\infty} \frac{\sqrt{x^2 + x + 1} - 9x}{2x} =$$

Select one:

- ☐ a. ∞
- ☒ b. -5
- ☐ c. $-\infty$
- ☐ d. 5

If $f(x) = \sqrt[3]{(x-4)^2}$ then
 $f''(x) =$

Select one:

☐ a. $\frac{1}{9 \sqrt[3]{(x-4)^4}}$

☒ b. $\frac{2}{9 \sqrt[3]{(x-4)^4}}$

☐ c. $\frac{1}{9 \sqrt[3]{(x-4)^4}}$

☐ d. $\frac{2}{9 \sqrt[3]{(x-4)^4}}$

Given that, $\lim_{x \rightarrow 1^+} f(x) = 5$,

$\lim_{x \rightarrow 1^-} f(x) = 8$ and $f(1) = 4$

then
 $\lim_{x \rightarrow 3^+} f(4 - x) =$

Select one:

- ☐ a. 5
- ☐ b. does not exist
- ☐ c. 4
- ☒ d. 8

Using the cylindrical shells method, the volume of the solid generated when the region bounded by

$$x = y^2 - 3y \text{ and the } y\text{-axis}$$

if it is revolved about the x-axis, is given by:

Select one:

a. $2\pi \int_0^3 (y^3 - 3y^2) dy$

☒ b. $2\pi \int_0^3 (3y^2 - y^3) dy$

c. $\pi \int_0^3 (3y^2 - y^3) dy$

d. $\pi \int_0^3 (y^3 - 3y^2) dy$

Evaluate the following limit:

$$\lim_{x \rightarrow -\infty} \frac{\sqrt{x^2 + x + 1} - 9x}{2x} =$$

Select one:

- ☐ a. ∞
- ☒ b. -5
- ☐ c. $-\infty$
- ☐ d. 5

If $f(x) = \sqrt[3]{(x-4)^2}$ then
 $f''(x) =$

Select one:

☐ a. $\frac{1}{9 \sqrt[3]{(x-4)^4}}$

☒ b. $\frac{2}{9 \sqrt[3]{(x-4)^4}}$

☐ c. $\frac{1}{9 \sqrt[3]{(x-4)^4}}$

☐ d. $\frac{2}{9 \sqrt[3]{(x-4)^4}}$