تم تحميل هذا الملف من موقع المناهج الإماراتية

| الملف 100 سؤال للعلامة الكاملة |
| --- |
| موقع المناهج ⇦ المناهج الإماراتية ⇦ الصف الثاني عشر المتقدم ⇦ رياضيات ⇦ الفصل الأول |

| روابط مواقع التواصل الاجتماعي بحسب الصف الثاني عشر المتقدم | | | |
| --- | --- | --- | --- |
| | | | |
| روابط مواد الصف الثاني عشر المتقدم على تلغرام | | | |
| التربية الاسلامية | اللغة العربية | اللغة الانجليزية | الرياضيات |

| المزيد من الملفات بحسب الصف الثاني عشر المتقدم والمادة رياضيات في الفصل الأول | |
| --- | --- |
| 1 | حل تمارين الدرس الثاني مفهوم النهاية |
| 2 | رياضيات متكاملة دليل المعلم |
| 3 | دليل المعلم |
| 4 | الفصل الاول الوحدة الأولى المتباينات غير الخطية |
| 5 | جميع أوراق عمل |

# AL SAFA SCHOOL

## TERM 1

## 12 ADVANCE

## 100 QUSATION YOUR WAY

## TO FULL MARK


## MR: ASHRAF SAAD

0508564850 أشرف سعد

1. $\lim_{x\to 0}( e^{-x} - \cos x + \pi)$

a. $1$ b. $0$ c. $\pi$ d. $-1$

---

2. $\lim_{x\to 0} \tan^{-1}\left( \frac{x+3}{3} \right)$

a. $\frac{\pi}{4}$ b. $\frac{\pi}{3}$ c. $\frac{\pi}{2}$ d. $\frac{\pi}{6}$

---

3. $\lim_{n\to 0} \frac{x^{2n}-1}{x^{n}-1}$

a. $2$ b. $1$ c. $-1$ d. $0$

---

4. $\lim_{x\to 0} \frac{e^{3x}-1}{1-e^{2x}}$

a. $\frac{-3}{2}$ b. $\frac{3}{2}$ c. $\frac{2}{3}$ d. $\frac{3}{2}$

---

5. $\lim_{x\to 3} \frac{|x-4|-1}{x^{2}-9}$

a. $\frac{1}{6}$ b. $\frac{-1}{6}$ c. $6$ d. $-6$

**0508564850** **أشرف سعد**

6. Find the value of **m** if $\lim_{x\to 5} \frac{x^2 - 2x + m}{x - 5}$ is Exist.

a. 15 b. $-15$ c. 3 d. $-3$

---

7. Find the value of **m** if $\lim_{x\to 2} \frac{\sqrt{x+m} - 5}{x - 2}$ is Exist.

a. 23 b. $-23$ c. 2 d. $-2$

---

8. $\lim_{x\to 4} \left( \frac{1}{x-4} - \frac{8}{x^2-16} \right)$

a. $\frac{1}{4}$ b. DNE c. 8 d. $\frac{1}{8}$

---

9. $\lim_{x\to 0} \frac{x}{5 - \sqrt{25+x}}$

a. 5 b. 10 c. $-10$ d. $\frac{1}{5}$

---

10. $\lim_{x\to -1} \frac{4 - \sqrt{x^2+x+16}}{x^3-1}$

a. 0 b. 3 c. 6 d. DNE

0508564850 أشرف سعد

11. $\lim_{x\to 0} \frac{3x^3 - x^2 + 5x}{x - 5}$

a. 3 b. $-1$ c. 0 d. 5

---

12. $\lim_{x\to 0} \frac{(3+x)^3 - 27}{x}$

a. 9 b. 27 c. $-27$ d. $-9$

---

13. If $\lim_{x\to \frac{1}{2}} \frac{m|x-1| + n[x]}{x} = \lim_{x\to 0} \frac{6x}{\tan 3x}$ then **m** =

a. 2 b. $-2$ c. $\frac{1}{2}$ d. $-\frac{1}{2}$

---

14. $\lim_{x\to 0} \frac{x^2 + x}{\sqrt{x^4 + 2x^2}}$

a. $\frac{1}{\sqrt{2}}$ b. $-\frac{1}{\sqrt{2}}$ c. DNE d. 0

---

15. $\lim_{x\to 0} \frac{\sqrt[3]{1+2x} - 1}{x}$

a. $\frac{3}{2}$ b. $-\frac{3}{2}$ c. $\frac{2}{3}$ d. $-\frac{2}{3}$

0508564850 أشرف سعد

16. $\lim_{x\to 5}\sqrt{x-5}$

a. $0$ b. $\infty$ c. DNE d. $-\infty$

---

17. $\lim_{x\to 0}\ (x^2+1)^{[x]}$

a. $2$ b. $-1$ c. $0$ d. $1$

---

18. $\lim_{x\to 3}\ \frac{x-3}{\frac{1}{x}-\frac{1}{3}}$

a. $-9$ b. $-\frac{1}{9}$ c. $9$ d. $\frac{1}{9}$

---

19. $\lim_{x\to 0}\ \frac{1-e^{-x}}{1-e^{x}}$

a. $1$ b. $-1$ c. DNE d. $-3$

---

20. $\lim_{x\to 0^+}\ \frac{x}{\sqrt{9\ -9\ \cos^2 x}} = \lim_{x\to 0.5}\ [x+m]$ find the value of **m**

a. $-1$ b. $1$ c. $0$ d. $2$

**0508564850** **أشرف سعد**

21. $\lim_{h\to 0} \frac{(x+h)^3 - x^3}{h}$

a. $3x^2$ b. $2x^2$ c. $x^2$ d. $x$

---

22. For what value of the constant c is the function f continuous $(-\infty\ ,\ \infty)$

$$f(x) = \begin{cases} cx^2 + 2x & if\ x < 3 \\ x^3 - cx & if\ x \geq 3 \end{cases}$$

a. $\frac{7}{4}$ b. $\frac{4}{7}$ c. $-\frac{7}{4}$ d. $\frac{4}{7}$

---

23. Find the value of a and b that make f continuous everywhere

$$f(x) = \begin{cases} \frac{x^2-4}{x-2} & if\ \ x < 2 \\ ax^2 - bx + 3 & if\ 2 \leq x < 3 \\ 2x - a + b & if\ x \geq 3 \end{cases}$$

a. $a = b = 0.5$ b. $a = b = 1$

c. $a = b = -0.5$ d. $a = b = -1$

24. Find the value of a that make f continuous everywhere

$$f(x) = \begin{cases} a(\tan^{-1}x + 2) & if \quad x < 0 \\ 2b^x - 7 & if\ 0 \le x \le 3 \\ \ln(x-2) + x^2 & if\ x > 3 \end{cases}$$

a. $\frac{5}{2}$ b. $\frac{7}{2}$ c. $\frac{-5}{2}$ d. $\frac{-7}{2}$

---

25. Determine where the function

$f(x) = \frac{\ln(x^2-1)}{\sqrt{x^2-2x}}$ is continuous

a. $(-\infty, -1) \cup (2, \infty)$ b. $(-\infty, -1] \ (2, \infty)$

c. $(-\infty, -1) \cup (1, \infty)$ d. $(-\infty, 0) \cup (2, \infty)$

---

26. Determine the values of a and b that make function continuous at x=0

$$f(x) = \begin{cases} a + \cot^{-1}x & if \quad x < 0 \\ 3b - \frac{\pi}{2} & if \quad x = 3 \\ b + \tan x & if \quad x > 0 \end{cases}$$

a. $a = -\frac{\pi}{4}, b = \frac{\pi}{4}$ b $a = \frac{\pi}{4}, b = -\frac{\pi}{4}$

c. $a = -\frac{\pi}{2}, b = \frac{\pi}{2}$ d. $a = \frac{\pi}{2}, b = -\frac{\pi}{2}$

27. Determine where the function

$f(x) = \frac{\sqrt{x+1}+e^x}{\sqrt{x^2-2}}$ is continuous

a. $(-\sqrt{2}, -1) \cup (1, \sqrt{2})$ b. . $(-1, \sqrt{2}] \cup (2, \infty)$

c. $(-1, \infty)$ d. $(\sqrt{2}, \infty)$

---

28. Determine where the function

$f(x) = \frac{\sqrt{x^2-4}}{\sqrt{9-x^2}}$ is continuous

b. $(-3, -2] \cup [2, 3)$ b. . $[-3, -2] \cup (2, 3)$

c. $\{x \epsilon R : x \neq \pm 2\}$ d . $\{x \epsilon R : x \neq \pm 3\}$

---

29. the value of a that make f continuous everywhere

$$f(x) = \begin{cases} \frac{\sqrt{5-x}-2}{\sqrt{10-x}-3} & if \quad x \neq 1 \\ a & if \quad x = 1 \end{cases}$$

a. $\frac{3}{2}$ b. $\frac{-3}{2}$ c. $\frac{2}{3}$ d. $\frac{-3}{2}$

30. what is the kind of discontinuously of

$$f(x) = \left\{ x^2 \sin\frac{1}{x} \right\}$$

a. *jumb* b. *removabler* c. infinity d. *oscillation*

---

31. what is the kind of discontinuously of

$$f(x) = \begin{cases} \sqrt{x^2 - 4} & x \neq 0 \\ 4 & x = 0 \end{cases}$$

a. *jumb* b. *removabler* c. infinity d. *oscillation*

---

32. determine where $f(x) = \{ \ x \cot x \}$ *is discontinuous*

a. $x = \frac{n\pi}{2} \ , n \in z$ b. $x = n\pi \ , n \in z$

c. $(-\infty \ , \infty)$ d. $(-\infty \ , 0)$

**0508564850** **أشرف سعد**

33. the value of a, b that make f continuous at x=1

$$f(x) = \begin{cases} \dfrac{x^2 - bx - 3}{x+1} & if \quad x \neq -1 \\ ax + 5 & if \quad x = -1 \end{cases}$$

a. $2\ ,\ 9$ b. $9\ ,\ -2$ c. $-9\ ,\ -2$ d. $-9\ ,\ 2$

---

34. Which function is continuous on $[0\ ,1]$

a. $f(x) = \sqrt{1-x}$

b. $f(x) = \frac{\sin x}{x}$

c . $f(x) = [x+1]$

d. $f(x) = \begin{cases} 1 & if \quad 0 \leq x < 0.5 \\ -1 & if \quad 0.5 \leq x \leq 1 \end{cases}$

---

35. How many discontinuous points for f where

$$f(x) = \begin{cases} \frac{1}{x^3-4x} & if \quad x \leq 2 \\ 1 & if \quad x > 2 \end{cases}$$

a. 1 b. 4 c. 3 d. 2

36. what is the kind of discontinuously of

$f(x) = \left\{ \frac{1}{\ln x^2} \right\}$ at x=0

a. *jumb* b. *removabler* c. infinity d. *oscillation*

---

37. $\lim_{x\to\infty} \frac{\sqrt[5]{x} - \sqrt[3]{x}}{\sqrt[5]{x} + \sqrt[3]{x}}$

a. 1 b. $-1$ c. $\frac{1}{3}$ d. $\frac{1}{5}$

---

38. $\lim_{x\to\infty} \frac{\sin 2x}{x}$

a. 2 b. 1 c. 0 d. $-1$

---

39. $\lim_{x\to\infty} \frac{15+ax}{-2x+7} = -4$ , then **a** =

a. $-8$ b. $-2$ c. $8$ d. $-4$

---

40. $\lim_{x\to\infty} \left( \frac{5+4x^2}{2x^2-6} + m \right) = 8$ , then **m** =

a. $4$ b. $2$ c. $10$ d. $6$

41. $\lim_{x\to\infty} \frac{(a-3)\,x^5 + x^b + 3x}{x^2+3} = 1$ , find a ,b

a. $3, 1$ b. $3, 2$ c. $-3, -2$ d. $3\,, 0$

---

42. $\lim_{x\to\infty} \frac{a\,x^3 - 5x^3 + nx^2 + 7}{3x^2+6} = -2$ , find a , n

a. $-5, 3$ b. $5, 6$ c. $5, -6$ d. $5\,, 3$

---

43. $\lim_{x\to\infty} \frac{x^{-2}+5}{10+x^{-2}} =$

a. $1$ b. $.\frac{1}{2}$ c. $2$ d. $-1$

---

44. $\lim_{x\to\infty} \sec^{-1} \frac{x^2+2}{x+1} =$

**0508564850** **أشرف سعد**

a. $\infty$ b. . 0 c. $\frac{\pi}{2}$ d. $\frac{\pi}{3}$

---

45. $\lim_{x\to\infty} \frac{2x}{\sqrt{x^{2+4}}} =$

a. 2 b. $-2$ c. 0 d. 1

46. Find the equation of horizontal asymptote of

f(x) = $\left\{ \frac{-10+3x^{-3}}{5x^{-3}-2} \right\}$

a. $y = \frac{3}{5}$ b. $y = \frac{-3}{5}$ c. $y = 5$ d. $y = -5$

---

47. $\lim_{x\to\infty} \frac{\ln(2+e^{3x})}{\ln(1+e^{x})} =$

a. 2 b. . 3 c. $-3$ d. $-2$

---

48. $\lim_{x\to\infty} \frac{80\,x^{-0.2}+60}{8\,x^{-0.2}+15} =$

a. 4 b. $-4$ c. 10 d. $-10$

---

49. $\lim_{x\to 0} \frac{80\,x^{-0.2}+60}{8\;x^{-0.2}+15} =$

a. $4$ b. $-4$ c. $10$ d. $-10$

---

50. $\lim_{x\to\infty} \sqrt{9\,x^2-3x+1}-3x =$

a. $\frac{1}{2}$ b. $\frac{1}{4}$ c. $-\frac{1}{4}$ d. $-\frac{1}{2}$

51. Determine a vertical asymptotes if

f(x) = $\frac{5}{4e^x-12}$

a. $ln\,3$ b. $ln\,2$ c. $ln\,4$ d. $3$

---

52. Determine a slant asymptotes if

f(x) = $\frac{x^3}{x^2-x-2}$

a. $y=x+1$ b. $y=x-1$ c. $y=x$ d. $x=y+1$

---

53. if $y = \sin^2 x+\cos^2 x$ find $y'$

a. $1$ b. $-1$ c. $0$ d. $2\,\sin x\cos x$

**0508564850** **أشرف سعد**

54. if $f(x) = e^{\frac{\ln x}{2}}$ then $f'(9)$ =

a. $\frac{1}{9}$ b. $\frac{9}{2}$ c. $\frac{1}{6}$ d. $9$

55. if $y = \ln(\tan x)$ then $y'$ =

a. $\sec^2 x$ b. $\sin x$ c. $\sec x \csc x$ d. $\csc^2 x$

56. which a function is not differentiable at x=0

a. f(x) = $\sin|x|$ b. f(x) = $|x|^2$

c. f(x) = $\cos|x|$ d. f(x) = $x|x|$

57. if $f(x) = e^{2\ln(\sin x)}$ find $f''(x)$ =

a. $2\cos 2x$ b. $\cos 2x$ c. $\sin 2x$ d. $2\cos x\, e^{2\ln\sin x}$

58. if $f(x) = \sqrt{x^3 + 2x^2 + 4}$ have an inverse function g(x)

what is the value of $\grave{g}(4)$ =

a. $\frac{4}{7}$ b. $-\frac{7}{4}$ c. $\frac{7}{4}$ d. $\frac{1}{2}$

---

59. if $\lim_{h\to 0} \frac{f(3+h)-f(3)}{3h} = 21$ , $f(x) = x^3 - ax$ find $a$ = ?

a. $-5$ b. $-36$ c. $12$ d. $-12$

60. if $\sin x = xy$ then

$2y' + xy + xy'' =$

a. $1$ b. $0$ c. $-1$ d. $2$

---

61. if $y = u^3 - 5u$ , then $u = \frac{1}{f(x)} - 3$

,$f(1) = 1$ , $f'(1) = 2$ find $y'$ $at$ $x = 1$

a. $14$ b. $22$ c. $-14$ d. $-22$

---

62. if $f'(4) = 5$ , find

$\lim_{x\to 4} \frac{f(x)-f(1)}{\sqrt{x}-2} =$

a. $20$ b. $-20$ c. $10$ d. $-10$

---

63. if $f(x)=\frac{2x+k}{(x-1)^2}+a$ , find a , k where $f(x)$ has a horizontal asymptote at $(0\ ,\ 6)$

a. $a=2\ ,\ k=4$ b. $a=\ \ k=3$

c. $a=7\ ,\ k=-1$ d. $a=0\ ,\ k=6$

64. if $y=\ a\cos 3x$ where $a$ is constant $\cos 3x\neq\ 0$ find $a$ where $y''+2y-14\cos 3x=0$

a. $2$ b. $-2$ c. $1$ d. $-1$

---

65. if $\mathrm{f(x)}=x^3\mathrm{g(x)}+\mathrm{h(g(x))}$ , where , $g'(1)$ =4 ,$\mathrm{g(1)}=1$ , $\mathrm{h(x)}=2x^2+1$ find $f'(1)$

a. $19$ b. $23$ c. $-23$ d. $-19$

---

66. if $y=u+\sec 5\mathrm{u}$ , $u=x^3+7\mathrm{x}$ find $\dot{y}$ $at\ x=0$

a. $7$ b. $8$ c. $6$ d. $9$

---

67. if $f'(2) = 4$ , $f(2) = 5$ ,

find $\lim_{x\to 2} \frac{(x^2-4)\ f(x)}{x-2} =$

a. $-20$ b. $20$ c. $16$ d. $-16$

---

68. if $x = \sqrt{t+3}$ , $t = \cos 2y + \tan y$ find $y'$ $at\ y = 0$

a. $4$ b. $\frac{1}{4}$ c. $-4$ d. $0$

69. which a function is not differentiable at x=1

a. $|x-1|$ b. $\frac{x-1}{x^2-1}$

c. f(x)= $\begin{cases} 2x-1\ , & x<1 \\ 4x+5\ , & x \geq 1 \end{cases}$ d. $\sqrt{x+3}$

---

70. find the derivative of the function

$f(x) = \tan^{-1}(2e^{3x})at\ \ x = 0$

a. $\frac{6}{4}$ b. $\frac{6}{5}$ c. $2$ d. $\frac{2}{5}$

---

71. Determine the value of x for which the tangent line of the function $y = \cos(y) - x^2 + 2x - 2$ $is\ horizontal$

a. $x = 1$ b. $y = -1$ c. $y = 1$ d. $x = -1$

72. if $x = e^{x^2y} - e^{y}$ find $\frac{dy}{dx}$ $at$ $x = 0$

a. $-1$ b. $1$ c. $0$ d. $2$

73. if $f(x) = \begin{cases} (2a-1)x + 5b & if \quad x > 1 \\ ax^3 - bx + 5 & if \quad x \leq 1 \end{cases}$

Find values of a, b which make $f(x)$ is differentiable $at$ $x = 1$

a. $a = 1$ , $b = -1$ b. $a = 0$ , $b = -1$

c. $a = 0$ , $b = 1$ d. $a = 1$ , $b = 0$

74. if $f(x) = \ln\sqrt{x^2 + 7}$ find $y'(x)$ $at$ $x = 1$

a. $8$ b. $\frac{1}{8}$ c. $1$ d. $-\frac{1}{8}$

0508564850 أشرف سعد

75. if $f(x) = \cos^2 x$ then $f''(x) + 4f(x) =$

a. $0$ b. $1$ c. $2$ d. $0$

---

76. if $f(x) = x\sin x + \cos x$

then $x\,f''(x) + x\,f(x) - 2f'(x) =$

a. $3$ b. $1$ c. $2$ d. $0$

77. if $f(x) = \frac{1}{4}^{x^2}$ find $f'(x)$ $at$ $x = 1$

a. $\frac{1}{2}$ b. $\frac{1}{4}$ c. $\ln\frac{1}{2}$ d. $\ln\frac{1}{4}$

---

78. if $y = \log_{10}(2x - 3)$ find $y'$

a. $\frac{2}{(2x-3)}$ b. $\frac{2}{(2x-3)\ln 10}$ c. $\frac{1}{2x-3}$ d. $\frac{1}{2x}$

---

79. Find all the value of x for which the tangent line to

$y = 2e^{3x}$ $is\ horizontal$

a. $x = -\frac{1}{3}$ b. $x = 0$ c. $y = -\frac{1}{3}$ d. $y = 0$

---

80. if $\sin y = 3x$ find $y'$ $at$ $y = 0$

a. $0$ b. $3$ c. $\frac{1}{3}$ d. $-3$

---

81. The slope of the tangent to the graph of

$f(x) = \sqrt{\sqrt{x} - 1}$ $at$ $x = 4$

a. $\frac{1}{2}$ b. $\frac{1}{4}$ c. $\frac{1}{8}$ d. $\frac{1}{6}$

82. The eight of the ball in feet after $\boldsymbol{t}$ sec, at is given by $f(x) = -6\,t^2 + 24t + 9$ what is the maximum height of the ball?

a. $24$ b. $0$ c. $33$ d. $9$

---

83. A product sells for $40$ AED, with the price increasing at the rate of $5$ AED per month at this price consumer buy $2000$ items, where the number sold is decreasing at the rate of

$10$ AED per month, what rate is the total revenue change?

a. 10400 b. 9600 c. 2055 d. 2040

---

84. Use the logarithm to find

$\frac{d}{dx}\ (x^{\sqrt{x}})\ at\ \ x = 1$

a. 1 b. 2 c. 0 d. $-1$

85. A bacterial population starts at 500 and triples every day, find he percentage rate of change in population.

a. 55% b. 70% c. 110% d. 140%

---

86. if $f(x) = \cos(3x),\ find\ f^{(37)}(x)$

a. $3^{37}\sin(3x)$ b. $-3^{37}\cos(3x)$

c. $-3^{37}\sin(3x)$ d. $3^{37}\cos(3x)$

---

87. if $f(2) = 5,\quad f'(2) = 3\ , f(5) = 4\ , f'(5) = -6\ ,\ ,$ $h(2x-8) = x^2 f(x)$ find $h'(2)$

a. 32 b. 20 c. $-110$ d. $-55$

---

88. if $f(x)$ passing $(4, 5)$ and the tangent line of the function $f(x)$ intersect the x−axis at $45^0$

then find $\lim_{x\to 4} \frac{5-f(x)}{4x-16}$

a. 4 b. $-\frac{1}{4}$ c. $-5$ d. $\frac{1}{5}$

89. if $s(t) = t^2 - \frac{\cos(\pi t)}{\pi^2}$ where $s(t)$ represents the position of an object in meter , compute the acceleration of the object $at \;\; t = 1\, sec$

a.1 b. $\pi$ c. $-1$ d. 0

---

90. Which of the following function has a tangent line $at \;\; x = 0$

a. $f(x)=\sqrt{x}$ b. $f(x)=|x|$

c. $f(x)= \tan^{-1} x$ d. $f(x) = \begin{cases} 2x+3 & , \quad if \;\; x < 0 \\ x^2 - 1 & , \quad if \;\; x \geq 0 \end{cases}$

---

91. if $f(3) = -9$ , $f'(3) = 10$ ,

find $\lim_{x\to 3} \frac{f^2(x)-81}{x^2-9}$

a. $30$ b. $-30$ c. $90$ d. $-90$

---

92. $\lim_{x\to 0} \frac{f'(x)-f'(1)}{x-1} =$

If $f(x) = x^5 - 2x$

a. $5$ b. $0$ c. $20$ d. $-1$

93. if $f'(x) = m\sqrt{f(x)}$ where $m > 0$ and $f''(x) = 32$ at a given point $x$ m find the value of $m$.

a. $6$ b. $8$ c. $5$ d. $7$

---

94. If $f(x) = x^3 - 4x^2 + 5$ then

find $\lim_{x\to 3} \frac{f'(x)-f'(3)}{x-3} =$

a. $3$ b. $10$ c. $-4$ d. $7$

---

95. If $3 \leq f'(x) \leq 7$ for all value of $x$ on $(3, 7)$ then the minimum value for $f(7) - f(3)$ is

a. 21 b. 10 c. 4 d. 12

---

96. If $f(x) = \sqrt{16 - x^2}$ then the domain of $f'(x)\ is$ a

a. $[-4,4]$ b. $(-4,4)$ c. $(-4,0)$ d. $[-4,0]$

---

97. If $N(x) = 4 - x + \sin(x)$ where $x\ on\ [-\pi, \pi]$ find the value of $c$ ?

a. $\frac{\pi}{3}$ b. $\frac{\pi}{2}$ , $-\frac{\pi}{2}$ c. $-\frac{\pi}{2}$ d. $\frac{\pi}{2}$

98. Find a value of satisfying the conclusion of the mean value theorem for $f(x) = x^2 + 2x + 1\ \ on\,[0,1]$

a.0 b. $\frac{1}{4}$ c. 1 d.$\frac{1}{3}$

---

99. Find a value of satisfying the conclusion of the mean value theorem for $f(x) = x^3 - x\ \ on\,[0,2]$

a. $\pm\frac{2}{\sqrt{3}}$ b. $\frac{2}{\sqrt{3}}$ c. $\frac{-2}{\sqrt{3}}$ d. $\frac{4}{3}$

---

100. Rolle's Theorem hypotheses are satisfied for the function $f(x) = x^2 - 4x \ \ on\, which$ of the following intervals?

a. $[-3,-2]$ b. $[2,3]$ c. $[-1,5]$ d. $[-2,0]$