

تعليمات لحل هذا الامتحان

١. الأسئلة كلها اختيار من متعدد.

٢. من فضلك اختر الإجابة الصحيحة لكل سؤال سواء a او b او c. ثم ضع الإجابة

الصحيحة في ال answer sheet (سيتم التصحيح من خلالها)

وهي في الصفحة الموجودة قبل الأسئلة مباشرة (سيتم التصحيح من خلالها).

٣. من يحتاج لمسودة فيمكن أن يستخدم الوجه الخالي من الأسئلة.

سيتم التصحيح بناء على اجابتك

في ال answer sheet فقط

مثال لطريقة الحل

40. The derivative of x^2 is

(a) $2x$

(b) x

(c) 2

هنا الإجابة الصحيحة هي رقم a نقوم بوضعها في ال

answer sheet بين القوسين كما يلي:

40. (a)

The answer sheet

Part I

1. ()

18. ()

2. ()

19. ()

3. ()

20. ()

4. ()

21. ()

5. ()

22. ()

6. ()

23. ()

7. ()

24. ()

8. ()

25. ()

9. ()

26. ()

10. ()

27. ()

Part II

28. ()

11. ()

29. ()

12. ()

30. ()

13. ()

31. ()

14. ()

32. ()

15. ()

33. ()

16. ()

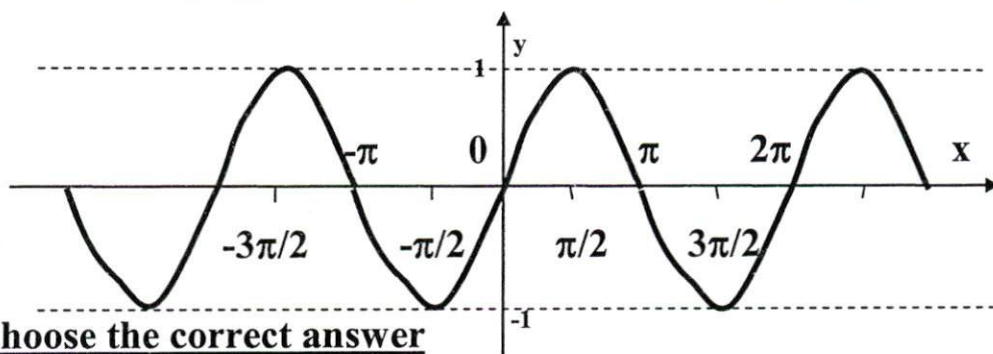
34. ()

17. ()

35. ()



ملاحظة: يوجد جدول لمشتقات الدوال في آخر ورقة الأسئلة



Choose the correct answer

الجزء الأول 20 درجة (كل سؤال درجتان)

The questions from 1 to 6, from the above graph

(1) The graph is the graph of

- (a) $y = \cos x$
- (b) $y = \tan x$
- (c) $y = \sin x$

(2) The domain is

- (a) $[-1, 1]$
- (b) \mathbb{R}
- (c) $(-1, 1)$

(3) The range is

- (a) \mathbb{R}
- (b) $(-1, 1)$
- (c) $[-1, 1]$

(4) The function is periodic with period

- (a) 2π
- (b) π
- (c) $\pi/2$

(5) The graph is a graph of

- (a) An even function
- (b) An odd function
- (c) a function which is neither odd nor even

(6) The zeros are

- (a) $x = \{n\pi\}$, n is an odd integer.
- (b) $x = \{n\pi\}$, n is an integer.
- (c) $x = \{n\pi\}$, n is an even integer.

7. Derivative of $\sin(x^3)$ is

- (a) $3\sin^2 x \cdot \cos x$
- (b) $3\cos(x^2)$
- (c) $3x^2 \cdot \cos(x^3)$

(8) Derivative of $y = \sec x \cdot \ln x$ is

- (a) $\sec x \cdot \tan x + \frac{1}{x}$
- (b) $\sec x \cdot \frac{1}{x} + \ln x \cdot \sec x \cdot \tan x$
- (c) $\sec x \cdot \tan x \cdot \frac{1}{x}$

(9) Derivative of $e^{\sin(\ln x)}$

- (a) $e^{\sin(\ln x)} \cdot \cos(\ln x)$
- (b) $e^{\sin(\ln x)} \cdot \frac{1}{x}$
- (c) $e^{\sin(\ln x)} \cdot \cos(\ln x) \cdot \frac{1}{x}$

(10) Derivative of $\cosh(x^5 \tanh x)$

- (a) $\sinh(x^5 \tanh x) [x^5 \cdot \operatorname{sech}^2 x + \tanh x \cdot 5x^4]$
- (b) $\sinh(x^5 \tanh x)$
- (c) $\sinh(x^5 \tanh x) [x^5 \cdot \operatorname{sech}^2 x]$

الجزء الثاني : 50 درجة (كل سؤال له درجتان)

(11) Derivative of $\ln(\sin x)$ is

- (a) $\cot x$
- (b) $\ln(\cos x)$
- (c) $\tan x$

(12) Derivative of $\ln(\ln x)$

- (a) $\ln\left(\frac{1}{x}\right)$
- (b) $\frac{1}{x \ln x}$
- (c) $\frac{1}{\ln x}$

(13) Derivative of $x^3 \cdot 3^x$ is

- (a) $x^3 \cdot 3^x \cdot \ln 3$
- (b) $3^x \cdot 3x^2$
- (c) $x^3 \cdot 3^x \cdot \ln 3 + 3^x \cdot 3x^2$

14. If $f'(x) = \lim_{h \rightarrow ?} \frac{f(x+h) - f(x)}{h}$

is called the derivative of $f(x)$ with respect to x if

- (a) $h \rightarrow 0$
- (b) $h \rightarrow \infty$
- (c) $h \rightarrow -\infty$

15. If $y = \frac{4}{x^2} + \sqrt{x} - \frac{1}{\sqrt{x}}$, then $y' =$

- (a) $\frac{8}{x^3} + \frac{2}{\sqrt{x}} + \frac{2}{\sqrt{x^3}}$
- (b) $-\frac{8}{x^3} + \frac{1}{2\sqrt{x}} + \frac{1}{2\sqrt{x^3}}$
- (c) $-\frac{8}{x^3} + 2\sqrt{x} + 2\sqrt{x^3}$

16. If $y = 4\cos^2(2x^3)$, then y' is

(a) $-24x^2 \cos(2x^3) \sin(2x^3)$

(b) $48x^2 \cos(2x^3) \sin(2x^3)$

(c) $-48x^2 \cos(2x^3) \sin(2x^3)$

17. If $y = x^3 - 2x + 10$, then $f'(2) =$

(a) 10

(b) 12

(c) 14

18. If $y = \sqrt{x+1}$, then $y' =$

(a) $2\sqrt{x+1}$

(b) $\frac{1}{\sqrt{x+1}}$

(c) $\frac{1}{2\sqrt{x+1}}$

19. The derivative of $\sec(2x)$ is

(a) $\sec x \tan x$

(b) $\sec(2x) \tan(2x)$

(c) $2\sec(2x) \tan(2x)$

20. If $f(x) = e^x$, $g(x) = \sin x$, then $[f \circ g(x)]'$ is

(a) x

(b) $e^{\sin x}$

(c) $\cos x e^{\sin x}$

21. $\frac{d}{dx} \left(e^{3x^2} \right)$

(a) e^x

(b) e^{3x^2}

(c) $6xe^{3x^2}$

22. $y = \ln(xe^x)$, then $y' =$

(a) 1

(b) $1 + \frac{1}{x}$

(c) $\frac{1}{x}e^x$

23. $\frac{d}{dx}\left(\frac{1}{x}\right) =$

(a) $-x^2$

(b) $\frac{1}{x^2}$

(c) $-\frac{1}{x^2}$

24. If $f(x) = x \cos x$, then $f'(0) =$

(a) -1

(b) 0

(c) 1

25. $y = \ln(e^{x^2})$, then $y' =$

(a) $\ln x$

(b) $\frac{1}{e^{x^2}}$

(c) $2x$

26. $\frac{d}{dx}[\cot(x^2 + 1)] =$

(a) $2x \csc^2(x^2 + 1)$

(b) $-2x \csc^2(x^2 + 1)$

(c) $-\csc^2(x^2 + 1)$

$$27. \frac{d}{dx} [\tan^{-1}(2x)] =$$

(a) $2 \sec^{-1}(2x)$

(b) $\frac{1}{1+2x^2}$

(c) $\frac{2}{1+4x^2}$

$$28. y'' \text{ of } xy = 2 \text{ is}$$

(a) $\frac{2}{x^3}$

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

(c) $\frac{4}{x^3}$

$$29. \text{ If } y = 4^x - 3 \log_4 x, \text{ then } y' =$$

(a) $4^x - \frac{3}{x \ln 4}$

(b) $4^x \ln 4 - \frac{3}{x \ln 4}$

(c) $\frac{12}{x \ln 4}$

$$30. y = \ln(e^x \cdot \ln x), \text{ then } y' =$$

(a) 1

(b) $1 + \frac{1}{x \ln x}$

(c) $\frac{1}{x} e^x$

$$31. \text{ If } y = x^{\sin x}, \text{ then } y' =$$

(a) $x^{\sin x} \left[\frac{\sin x}{x} + \ln x \cos x \right]$

(b) $x^{\sin x} \left[\frac{\cos x}{x} + \ln x \sin x \right]$

(c) $x^{\sin x} [1 + \ln x \cos x]$

32. If $y = x\sqrt{2x-3}$, then $y'(6) =$

- (a) 5
(b) 6
(c) 7

33. The value of the limit $\lim_{x \rightarrow a} \frac{x^7 - a^7}{x - a}$ is equal to

- (a) 0/0
(b) $7a^7$
(c) $7a^6$

34. If we divide $x^5 - 5x^4 + 9x^3 - 6x^2 - 16x + 13$ by $(x^2 - 3x + 2)$, the quotient is

- (a) $x^3 - 2x^2 + x + 1$
(b) $x^3 - 2x^2 + x - 1$
(c) $x^3 - 2x^2 + x$

35. The fraction $\frac{2x-1}{x^2-x-6}$ can be expressed as the sum of its partial fractions as follows

- (a) $\frac{1}{(x-2)} - \frac{1}{(x+3)}$
(b) $\frac{1}{(x+2)} + \frac{1}{(x-3)}$
(c) $\frac{1}{(x+2)} - \frac{1}{(x-3)}$

مع دعواتی لکم بالتوفیق د/أحمد قمر

$f(x)$	x^n	\sqrt{x}	e^x	a^x	$\ln x$	$\csc x$	$\cos x$	$\sin x$	$\sec x$
$f'(x)$	nx^{n-1}	$1/2\sqrt{x}$	e^x	$a^x \ln a$	$1/x$	$-\csc x \cot x$	$-\sin x$	$\cos x$	$\sec x \tan x$

$f(x)$	$\cosh x$	$\sinh x$	$\tanh x$	$\coth^{-1} x$	$\tan^{-1} x$	$\cosh^{-1} x$	$\log_a x$	\sqrt{x}	$\cot x$
$f'(x)$	$\sinh x$	$\cosh x$	$\operatorname{sech}^2 x$	$\frac{1}{1-x^2}$	$\frac{1}{1+x^2}$	$\frac{1}{\sqrt{x^2-1}}$	$1/(x \ln a)$	$1/(2\sqrt{x})$	$-\csc^2 x$