**Câu 1.** Given ��(��) = ��2, ��(��) = ��5 + 2, find (�� ∘ ��)′(1) A. 6

B. 15

C. 30

D. None of the other choices is correct

E. -30

**Câu 2.** Find the relative extrema, if they exist, of the function ��(��) =8��

��2+1

A. Relative minimum at (-1, -4), relative maximum at (1, 4) B. Relative minimum at (-1, -4), relative maximum at (0, 0) C. Relative maximum at (-1, -4), relative minimum at (1, 4) D. Relative maximum at (0, 0), no relative minimum

E. None of the other choices is correct

**Câu 3.** Evaluate the limit, if it exists: lim ��→1

A. 0

B. 5/2

C. 5/4

D. -5/2

E. None of the other choices is correct F. -5/4

√��~~2~~+3��−2 ��−1

**Câu 4.** A table of values for f, g, f’, g’ is given:

| x | f(x) | g(x) | f’(x) | g’(x) |
| --- | --- | --- | --- | --- |
| 0 | 1 | 1 | 2 | -2 |
| 1 | 0 | 2 | 3 | -1 |
| 2 | 4 | -1 | 5 | 6 |

Find h’(1) if h(x) = g(f (x)).

A. 0

B. -6

C. None determined

D. -2

E. None of the other choices is correct

F. -5

**Câu 5.** Find dy/dx by implicit differentiation ����2 = 4. A. None of the other choices is correct

B. -2y/x

C. 2x/y

D. –y/(2x)

E. x/(2y)

**Câu 6.** Use the Simpson’s Rule with n = 4 to approximate the integral: 5

∫ ��������������

1

A. None of the other choices is correct

B. -5.92

C. -6.26

D. -3.43

E. -6.89

ℎfor ��(��) =1��

**Câu 7.** Simplify the quotient ��(��+ℎ)−��(��)

(i) −1

(��−ℎ)��(ii) 1

(��+ℎ)��(iii) −1

(��+ℎ)��(iv) −1

(��+ℎ)(��−ℎ)

A. (iii)

B. (iv)

C. (i)

D. (ii)

E. None of the choices is correct

**Câu 8.** Find the vertical asymptotes to the graph of the following function: ��(��) =�� − 4

6 − √�� − ��

A. x = -4 and x = 6

B. x = 4 and x = 6

C. x = 4 and x = -6

D. Does not exist

**Câu 9.** Find the average value of the function f(x) = 7x + 5 on the interval [1;4] A. 7

B. None of the other choices is correct

C. 22.5

D. 2

E. 14

F. 4

**Câu 10.** Express the limit as a definite integral on the given interval.

��

��⟶∞∑cos2(2������∗) Δ��

lim

��=1

(i)∫ cos2(2��)���� 10 (ii)∫ cos2 (2����) ���� 10(iii)∫ cos2(2����)���� 1−1(iv) ∫ cos2(2����)���� 10

A. (iv)

B. (iii)

C. (i)

D. None of the other choices is correct

E. (ii)

**Câu 11.** A particle is moving with the given data. Find the position function s(t) of the particle.

v(t) = 3sint – 5cost, s(π) = 1

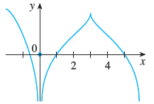
A. s(t) = 3cost + 5sint – 2

B. s(t) = 3cost – 5sint – 2

C. s(t) = -3cost – 5sint + 4

D. None of others

E. s(t) = 3cost – 5sint – 2

**Câu 12.** The graph of f(x) is given. State the numbers at which f(x) is not differentiable 

A. 0; 1; 3; 4

B. 0; 3

C. 3

D. 0; 2; 4

E. None of the other choices is correct

**Câu 13.** Using the Midpoint Rule with n = 4 to approximate

5

∫ (�� + 0.5)����

1

A. 14

B. 12

C. 16

D. None of the choices is correct E. 20

**Câu 14.** Which of the following integrals is divergent?

5��2���� ∞

1(iii) ∫1+����−2��

(i)∫2010

√��~~3~~���� ∞

������ ∞

1(ii) ∫1

1

A. (iii)

B. (i)

C. (ii)

D. None of the other choices is correct

**Câu 15.** Find f(x) such that f’(x) = ��2 − 11�� + 7 and f(0) = 3

(i) f(x) = (13) ��3 − (112) ��2 + 6�� + 1 (iii)f(x) = (13) ��3 − (112) ��2 + 7�� + 3 (ii)f(x) = (13) ��3 − 12��2 + 7�� + 3 (iv)f(x) = (13) ��3 − 12��2 + 7�� + 1 A. None of the other choices is correct

B. (ii)

C. (iv)

D. (iii)

E. (i)

**Câu 16.** Find y’(0) for y = (3��2 + 5�� + 1)3/2

A. 5/2

B. 15/2

C. None of the choices is correct

D. 1/2

E. 3/2

ℎfor ��(��) =��22

**Câu 17.** Simplify the quotient ��(��+ℎ)−��(��)

A. (2x + h)/2

B. (x – 2h)/2

C. None of the other choices is correct

D. (-2x – h)/2

E. x/2

**Câu 18.** Find all the numbers that satisfy the conclusion of Rolle’s Theorem ��(��) = ��2 − 5�� + 1; [0; 5]

A. 5 and 2

B. None of the other choices is correct

C. 2 and 5

D. 5/2

E. 0 and 5

F. -5/2

**Câu 19.** At which points on the curve �� = 5�� + 10��3 − 3��5do the tangent lines have largest slope?

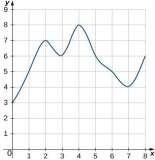
A. (0, 0) and (1, 12)

B. Does not exist

C. (0, 0)

D. (-1, -12) and (1, 12)

E. (-1, -12) and (0, 0)

**Câu 20.** Given the curve of f(x) on the interval [0,8], compute the right Riemann sum R8 

A. 47 B. 45.5 C. 44 D. None of the other choices is correct