Single variable calculus

70	7
total points:100	Correct
	questions:10

Result

Passing score not reached, please try again 🙍

Detailed ⌃   All   Mistakes

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1.

x	0	2	4	6
$f(x)$	4	k	8	12

The function f is continuous on the closed interval $[0, 6]$ and has the values given in the table above.

The trapezoidal approximation for $\int_0^6 f(x)\, dx$ found with 3 subintervals of equal length is 52. What is the value of k?

10 Points

○ 2

○ 6

○ 7

● 10

○ 14

✓ Correct Answer   +10 Points

2.

. The nth derivative of a function f at $x = 0$ is given by $f^{(n)}(0) = (-1)^n \dfrac{n+1}{(n+2)2^n}$ for all $n \geq 0$. Which of the

following is the Maclaurin series for f?

10 Points

○ A

○ B

○ C

● D

○ E

✓ Correct Answer   +10 Points

3.

Let $f(x) = (x^2 - 3x + 2)^n \cos \dfrac{\pi x^2}{16}$, we find $f^{(n)}(2) = $ _____

10 Points

○ A

○ B

● C

○ D

✗ Wrong Answer   +0 Points

4. $\displaystyle \lim_{x \to 0} \dfrac{\int_0^{\sin^2 x} \ln(1+t)dt}{\left(\sqrt[3]{1+x^3} - 1\right) \sin x}$ **10 Points**

○ A

○ B

● C

○ D

✓ Correct Answer   +10 Points

5.

Let $f(x)$ be differentiable on $[a, b]$ and $f'(a)f'(b) < 0$.

(1) There exists at least one point $x_0 \in (a, b)$ such that $f(x_0) < f(a)$;

(2) There exists at least one point $x_0 \in (a, b)$ such that $f(x_0) > f(b)$;

(3) There exists at least one point $x_0 \in (a, b)$ such that $f'(x_0) = 0$;

(4) There exists at least one point $x_0 \in (a, b)$ such that $f(x_0) = \dfrac{1}{2}[f(a) + f(b)]$.

The number of correct statements is ( ).

10 Points

○ 1

○ 2

● 3

○ 4

❌ Wrong Answer   +0 Points

6. If the series $\displaystyle\sum_{n=1}^{\infty} a_n$ converges, then ( )   **10 Points**

● A

○ B

○ C

○ D

❌ Wrong Answer   +0 Points

7.

If the function $f(x)$ has continuous second-order derivatives and satisfies the equation

$f(x) - 1 = \displaystyle\int_0^x f(1 - t)dt,$

then $f(x) = ($ $)$.

10 Points

● A

○ B

○ C

○ D

✅ Correct Answer   +10 Points

8.

The improper integral $\int_0^1 \arctan \sqrt{\dfrac{x}{1-x}}\, dx =$ **10**

Points

○ A

○ B

○ C

◉ D

✓ Correct Answer   +10 Points

9.

The number of asymptotes of the curve $y = \dfrac{x^2 \arctan x}{x - 1}$ is ().

10 Points

○ 0

○ 1

○ 2

◉ 3

✓ Correct Answer   +10 Points

10.

The length of the curve $y = x^4$ from $x = 1$ to $x = 5$ is given by

10 Points

○ A

○ B

○ C

◉ D

○ E

✓ Correct Answer   +10 Points

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