

Quiz Review Report

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Subject: Calculus

Score: 0 / 10

Accuracy: 0.00%

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1. Evaluate the limit: $\lim_{x \rightarrow 2} (x^2 + 3x - 10) / (x - 2)$

A) 7

B) 0

C) Undefined

D) 1

QUIZ REVIEW

Your Answer:
C

Correct Answer: 7

Explanation:

Factor the numerator as $(x-2)(x+5)$. Cancel $(x-2)$ and evaluate the limit of $(x+5)$ as x approaches 2.

2. Find the derivative of $f(x) = \sin(2x) * \cos(x)$

A) $2\cos(2x)\cos(x) - \sin(2x)\sin(x)$

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$$\cos(2x)\cos(x) - \sin(2x)\sin(x)$$

C) $2\cos(2x)\cos(x) + \sin(2x)\sin(x)$

D) $-2\cos(2x)\cos(x) - \sin(2x)\sin(x)$

Your Answer: B

Correct Answer: $2\cos(2x)\cos(x) - \sin(2x)\sin(x)$

Explanation:

Use the product rule: $(uv)' = u'v + uv'$. $u = \sin(2x)$, $v = \cos(x)$. $u' = 2\cos(2x)$, $v' = -\sin(x)$.

3. What is the integral of $\int x \cdot e^{(x^2)} dx$?

- A) $e^{(x^2)} + C$
- B) $0.5 \cdot e^{(x^2)} + C$
- C) $2 \cdot e^{(x^2)} + C$
- D) $x^2 \cdot e^{(x^2)} + C$

Your Answer: A

Correct Answer: $0.5 \cdot e^{(x^2)} + C$

Explanation:

Use u -
substitution.
Let $u = x^2$,

then $du = 2x$
dx. The
integral

becomes 0.5

$$\int_0^1 e^u du = 0.5 *$$

$$e^u + C = 0.5$$

* $e^G(x^2) + C.$

4. Find the critical points of the function $f(x) = x^3 - 6x^2 + 5$

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A) $x = 0, x = 4$

4

- B) $x = 2, x = 3$
- C) $x = -2, x = -3$
- D) $x = 1, x = 5$

Your Answer: C

Correct Answer: $x = 0, x = 4$

Explanation:

Find the derivative $f'(x) = 3x^2 - 12x$. Set $f'(x) = 0$ and solve for x : $3x(x-4) = 0$, so $x = 0$ or $x = 4$.

5. Determine
if the series
" $(n=1 \text{ to }) 1/$ "

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n^2
converges or
diverges.

- A) Converges
- B) Diverges

QUIZ REVIEW

C) Cannot
be determined

D) Oscillates

Your Answer: B

Correct Answer: Converges

Explanation:

This is a p-series with $p = 2$. A p-series converges if $p > 1$ and diverges if $p \leq 1$. Since $2 > 1$, the series converges.

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6. What is the area between the curve $y =$

QUIZ REVIEW

x^2 and the x -axis from $x = 0$ to $x = 2$?

- A) $\frac{8}{3}$
- B) 4

QUIZ REVIEW

D) $16/3$

Your Answer: A

Correct Answer: $8/3$

Explanation:

Integrate x^2 from 0 to 2: $\int_0^2 x^2 dx = [x^3/3] \text{ from } 0 \text{ to } 2 = (8/3) - 0 = 8/3$.

7. Find the equation of the tangent line to the curve $y = x^3 - 2x + 1$ at the point (1, 0).

A) $y = x - 1$

B) $y = x + 1$

QUIZ REVIEW

C) $y = -x + 1$

D) $y = -x - 1$

Your Answer: C

Correct Answer: $y = x - 1$

Explanation:

Find the derivative $y' = 3x^2 - 2$. Evaluate y' at $x = 1$: $y'(1) = 3(1)^2 - 2 = 1$. The tangent line has slope 1 and passes through $(1, 0)$. Using point-slope form: $y - 0 = 1(x - 1) \Rightarrow y = x - 1$.

8. Find the second derivative of $f(x) = x^4 - 3x^2 + 2x - 5$

A) $12x^2 - 6$

QUIZ REVIEW

B) $4x^3 - 6x + 2$

C) $12x^2 - 6x$

D) $4x^3 - 6$

Your Answer: B

Correct Answer: $12x^2 - 6$

Explanation:

First derivative: $f'(x) = 4x^3 - 6x + 2$. Second derivative: $f''(x) = 12x^2 - 6$.

**9. Evaluate
the definite
integral: $\int_0^1 (x^2 + 1) dx$**

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- A) 0
- B) 1
- C) -1
- D) $\frac{1}{2}$

Your Answer: A

Correct Answer: 1

Explanation:

The integral of $\cos(x)$ is $\sin(x)$. Evaluate $\sin(x)$ from 0 to $\frac{\pi}{2}$. $\sin(\frac{\pi}{2}) - \sin(0) = 1 - 0 = 1$.

100% QUIZ REVIEW

Q Determine whether the function $f(x) =$

**$x^6 + \sin(x)$ is
even, odd, or
neither.**

- A) Even
- B) Odd

QUIZ REVIEW

~~C) Neither~~

D) Both

Your Answer: C

Correct Answer: Odd

Explanation:

A function is even if $f(-x) = f(x)$ and odd if $f(-x) = -f(x)$. $f(-x) = (-x)^3 + \sin(-x) = -x^3 - \sin(x) = -(x^3 + \sin(x)) = -f(x)$. Therefore, the function is odd.
