Calculus AB Ciphering

Haynes Mu Alpha Theta 2019

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1. Find $\lim_{x \to -6} \frac{x+6}{x^2+3x-18}$

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2. Find the derivative of $g(x) = x^3 cos(2x)$

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3. Approximate $\int_0^{10} x^2 dx$ using a Left-Riemann sum with 5 subintervals.

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4. Find the tangent line to $y = x^2 + sin(\frac{\pi}{2}x)$ at $x = 3$ (use slope-intercept form)

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5. The radius of a sphere is increasing at a constant rate of $3\,ft/s$. At what rate is the volume increasing when the radius of the sphere is $5\,ft$? (give an exact answer with units)

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9. Hassan Malik needs help finding the 2nd derivative of $f(x) = csc^{-1}(tan^3(sin^{-1}(\sqrt{x})))$ at $x = 3$. Can you help him out?

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10. Evaluate $\lim_{n\to\infty} \sum_{i=1}^{n} \frac{\pi cos(\pi+\frac{\pi i}{n})}{n}$

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Calculus AB Ciphering Solution Key

(Note: units are not required unless the answer says [units required]; if provided, however, units must be correct)

1. $-1/9$
2. $3x^2cos(2x) - 2x^3sin(2x)$
3. 240
4. $y = 6x - 10$
5. $300\pi\, ft^3/s$ [units required]
6. $\sqrt{3}/3$ or $1/\sqrt{3}$
7. 800 (ft^2)
8. 0
9. "No" or "not in domain" or DNE
10. 0