Calculus
© 2015 Kuta Software LLC. All rights reserved.

Higher Order Derivatives

For each problem, find the indicated derivative with respect to *x*.

1) $f(x) = 4x^4$ Find $f^{(4)}$

2) $f(x) = 2x^5 + x^2 + 5x$ Find f''

3) $f(x) = -5x^2 + 5x$ Find f''

4) $f(x) = 5x^4 - 3x^2$ Find $f^{(4)}$

5) $f(x) = 5x^4 + 4x^3$ Find f''

6) $f(x) = 3x^4 - 2x$ Find f'''

7) $f(x) = -5x^4$ Find $f^{(4)}$

8) $f(x) = 3x^5 - 5x$ Find f''

9) $f(x) = 2x - 4x^{\frac{1}{5}}$ Find f'''

10) $f(x) = -2x^5 + \frac{1}{x^4}$ Find f''

11) $f(x) = x^3 + 4x^{\frac{4}{3}} + 3x^{\frac{3}{4}}$ Find $f^{(4)}$

12) $f(x) = -5x^{-3}$ Find f'''

13) $f(x) = -3x^5 - 5x^{\frac{1}{2}} + \frac{4}{x^2}$ Find $f^{(4)}$

14) $f(x) = -\sqrt[3]{x} - 5x^{-5}$ Find f'''

© 2015 Kuta Software LLC. All rights reserved. Made with Infinite Calculus.

Answers to Higher Order Derivatives

1) $f^{(4)}(x) = 96$

2) $f''(x) = 40x^3 + 2$

3) $f''(x) = -10$

4) $f^{(4)}(x) = 120$

5) $f''(x) = 60x^2 + 24x$

6) $f'''(x) = 72x$

7) $f^{(4)}(x) = -120$

8) $f''(x) = 60x^3$

9) $f'''(x) = -\dfrac{144}{125x^{\frac{14}{5}}}$

10) $f''(x) = -40x^3 + \dfrac{20}{x^6}$

11) $f^{(4)}(x) = \dfrac{160}{81x^{\frac{8}{3}}} - \dfrac{405}{256x^{\frac{13}{4}}}$

12) $f'''(x) = \dfrac{300}{x^6}$

13) $f^{(4)}(x) = -360x + \dfrac{75}{16x^{\frac{7}{2}}} + \dfrac{480}{x^6}$

14) $f'''(x) = -\dfrac{10}{27x^{\frac{8}{3}}} + \dfrac{1050}{x^8}$

© 2015 Kuta Software LLC. All rights reserved. Made with Infinite Calculus.