

Applied Calculus I Practice Problems for Quiz # 5

1. Let $f(x) = \frac{1-x^3}{\sqrt{x+2^x}}$. Find $f'(x)$.
2. Let $f(x) = \sin x \cos x \tan 5x$. Find $f'(x)$.
3. Let $f(x) = e^{3x} \sin x \cos x$. Find $f'(x)$.
4. Let $f(x) = (3x^4 - 2x^2 + 7)e^{3x}$. Find $f'(x)$ and $f''(x)$.
5. Let $f(x) = (3 + \sqrt{x^9 \cdot 15^x})^{22}$. Find $f'(x)$.
6. Let $g(y) = 7^{(13y+22)}$. Find $g'(y)$.
7. Let $f(x) = \sqrt{x + \sqrt{x + \sqrt{x}}}$. Find $f'(x)$.
8. Suppose that $h(b) = 2ab + g(b^2)$ and that $g'(w) = 3w^2$. Find $h'(b)$, $h'(a)$, and $h'(2)$.
9. Let $f(x) = \frac{e^{3x} \sin x}{\cos x}$. Find $f'(x)$.
10. Let $f(x) = \frac{6 \tan x + 9}{\sec x}$. Find $f'(x)$.
11. Let $h(x) = \sin(2x)$. Find the 83rd derivative, $h^{(83)}(x)$.
12. Find the equation of the tangent line to the curve $y = 3 \cos x \sin x$ at the point $(\pi/4, 3/2)$.
13. Find the equation of the tangent line to the curve $y = 2 \sec x - 4 \cos x$ at the point $(\pi/3, 2)$.
14. Find the equation of the tangent line to the curve $y = 2 \ln(x)$ at $x = 5$.
15. Find the equation of the tangent line to the curve $xy^3 + xy = 2$ at the point $(1,1)$.
16. Find the equation of the tangent line to the curve $xy^3 + xy = 12$ at the point $(6,1)$.
17. The temperature, H , in degrees Fahrenheit, of a can of soda that is put into a refrigerator to cool is given as a function of time, t , in hours, by $H(t) = 10 + 55e^{-2t}$. Find the rate of change of the temperature of the soda in units of degrees Fahrenheit per minute.
18. Let $f(x) = \sin(\cos(\sin x))$. Find $f'(x)$.
19. Let $f(x) = \sin(\cos(x^3))$. Find $f'(x)$.
20. Let $f(x) = 4 \cos(6 \ln(2x))$. Find $f'(x)$.
21. Let $f(x) = 7 \log_9(ex)$. Find $f'(x)$.
22. Let $f(x) = 3x^{3x}$. Find $f'(x)$.