Math Xb—Spring 2004

Problems on the Derivatives of Algebraic Functions

Note that $\log x = \log_{10} x$ and $\exp(x) = e^x$.

1. Find the derivative of $f(x) = 3x^2 + 14x + 10$.
2. Find the derivative of $g(x) = 12x^4 + 3x^3 + 1$.
3. Find the derivative of $y = 8x^{1/2} - 12x^3$.
4. Find the derivative of $f(t) = \sqrt{t} + t^{-2}$.
5. Find the derivative of $h(x) = x^{-3/2} + x^{3/2}$
6. Find the derivative of $y = 6t^2 + 5t - 7$.

Answers

1. $f'(x) = 6x + 14$
2. $g'(x) = 48x^3 + 9x^2$
3. $y' = 4x^{-1/2} - 36x^2$
4. $f'(t) = \dfrac{1}{2\sqrt{t}} - 2t^{-3}$
5. $h'(x) = -\dfrac{3}{2}x^{-5/2} + \dfrac{3}{2}x^{1/2}$
6. $y' = 12t + 5$