

Homework 3
(due Friday, October 17)

1. Compute the derivative of $g(a) = 5a^4 - 3a^\pi + \pi^7$
2. Suppose g and k are differentiable functions with $g'(3) = -2$, $k'(3) = 12$, $g(3) = 4$ and $k(3) = -5$. Let $h(x) = 5g(x)k(x)$.
 - (a) Find $h'(3)$
 - (b) Find the equation of the tangent line to the graph of $y = h(x)$ at $x = 3$.
3. Find $\frac{dz}{dx}$ for $z = -5(\ln 2)^x$.
4. Find all values of t so that $f(t) = e^t(t^3 - 4)$ has a horizontal tangent line.
5. Find the derivative of $p(r) = \frac{r^3 e^r}{r + 2}$.
6. Find the derivative of $f(x) = (4x^3 - 3x + 7)^8$.
7. Evaluate $\frac{d^2}{dy^2}(5\sqrt{y})$
8. Evaluate $\frac{d}{dq}(Ae^{kq})$ where A and k are constants.
9. Compute the derivative of $r(y) = \frac{4y^2}{\sqrt[3]{2 - y^2}}$