Gateway Exam

MATH142-02 Spring 2009 Version 2

Turn in your answers with all of your work on the colored paper. Wherever it is appropriate, you should multiply integers, reduce fractions, collect like terms and apply laws of exponents. On this exam, you are **NOT** allowed to use calculators.

1. Find $f'(x)$ and $f''(x)$ if $f(x) = 2x^4 - \cos(3x) + 5/19$.
2. Find $g'(x)$ if $g(x) = x^3e^{-4x}$.
3. Find $\frac{dy}{dx}$ if $y = x^5\sin^{-1}(2x)$.
4. Find $\frac{dy}{dx}$ and **simplify** if $y = \frac{7x + 1}{(x^2 - 3)^3}$.
5. Find $\frac{dy}{dx}$ implicitly if $x^3e^{-2y} + 3y^3 = x^5$.
6. Find $h'(x)$ if $h(x) = (\cos^{-1}x)^4$.
7. Find $\frac{dx}{dt}$ if $x = 5\sqrt{t^3}$.
8. Find $\frac{dw}{dz}$ if $w = 6\sinh^{-1}(2z)$.
9. Find $G'(x)$ if $G(x) = \csch(3x^5)$.
10. Find $\frac{dx}{dt}$ if $x = \sin(2t)\sinh(11t)$.