

No books, notes or graphing calculators. Turn off your cell phones.

Differentiate the following functions. Each question is graded *right* or *wrong* - no partial credit. You do not have to simplify your answer unless specifically instructed otherwise. Check your answers!

(2) 1.  $f(x) = (x + 3)^4$

(2) 2.  $f(x) = \frac{2t+5}{\sqrt{(2t+5)^3}}$

(2) 3.  $f(x) = (3x^7 - 12x^5 + 7)^{20}(e^x + \sin x)$

(2) 4.  $f(x) = \arctan(5^x)$

(2) 5.  $y = \frac{\sec^2(x) - \tan^2(x)}{\cos^2(x) + \sin^2(x)}$ . Simplify.

(2) 6.  $x^2 + y^2 = 2xy + 1$ . Find  $\frac{dy}{dx}$  at the point  $(2, 1)$ .

(2) 7.  $f(x) = \sqrt{\tan^3(3x) \sec(3x)}$

(2) 8.  $f(x) = \sin(x + \cos(\pi x^2 + 1))$

(2) 9.  $y = (\cos x)^{2x}$

(2) 10.  $f(x) = \ln\left(\frac{(x^4+3)^2 e^{5x}}{-7x^2+9x-2}\right)$