MATH 1552 - FALL 2015
QUIZ # 1

NAME: _____ TA: _____

DO NOT PUT YOUR WORK ON THE QUIZ - JUST THE ANSWERS

TA's: The total points on this quiz is 32 out of 30. Also, look for equivalent answers and if the student's answer is close, give partial credit. Don't take off anything if the student forgets the constant of integration.

1. (3 pts each) Find the following derivatives.

a. $g(x) = x^7 + \sqrt{7}\,x - \dfrac{1}{\pi + 1}$ Find the second derivarive **ANS: $42\,x^5$**

b. $f(x) = x^2\, e^{-\frac{2}{x}}$. Find $f\,'(x)$ **ANS: $2\,x\,e^{-\frac{2}{x}} + 2\,e^{-\frac{2}{x}}$**

c. $y = \cos^3(x^3)$. Find $\dfrac{dy}{dx}$ **ANS: $-9\,x^2 \cos^2(x^3)\,\sin(x^3)$**

d. $h(x) = \dfrac{2x - 5}{4 - x}$ Find $h\,'(x)$ **ANS $\dfrac{3}{(4 - x)^2}$**

e. $f(x) = 2\,\sin(\sqrt{x})$ Find $f\,'(\pi^2)$ **ANS: -1**

f. $y = (1 + x^2)\,\sin(x)$ Find $y\,'$ **ANS:**
$2\,x\,\sin(x) + (1 + x^2)\,\cos(x)$

g. $h(x) = x\,\ln(x^2 + 1)$ Find the derivative **ANS: $\ln(x^2 + 1) + \dfrac{2\,x^2}{x^2 + 1}$**

h. Find $\dfrac{dy}{dx}$ if $y = \tan^{-1}(x^3)$ **ANS: $\dfrac{3\,x^2}{1 + x}$**

2. (2 pts each) Find the following indefinite integrals

a. $\int \left(x^2 + x^{-1}\right)\, dx$ **ANS:** $\frac{1}{3}x^3 + \ln(x) + C$

b. $\int \left(e^{2x} + \frac{1}{x^2}\right)\, dx$ **ANS:** $\frac{e^{2x}}{2} - \frac{1}{x} + C$

c. $\int 5\sec(x)\tan(x)\, dx$ **ANS: 5 sec(x)+C**

d. $\int (\sin(x) + \cos(x))\, dx$ **ANS: sin(x) - cos(x) + C**