# PART ONE

Skip Part One if you passed the Part Ones or the retakes for BOTH of the midterms.

Stony Brook University MAT 125 – Calculus A

Dept. of Mathematics Final Exam December 14, 2016

Please show all of your work.

1) Evaluate the following limits:

a) $\lim_{x\to 6}\dfrac{x^2-8x+12}{x-6}=$

Answer (2 points)

b) $\lim_{x\to 0}\dfrac{5\sin 2x}{x}=$

Answer (2 points)

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Please show all of your work.

2) Find $f'(x)$ if $f(x)=5\cos^2(x)+4\sin^2(x)$

Answer (4 points)

3) Find $f'(x)$ if $f(x)=\frac{5}{x}-2\sqrt{x}+e^2$

Answer (4 points)

Please show all of your work

4) Find $f'(x)$ if $f(x)=\dfrac{3x^2+1}{1-x^2}$

Answer (4 points)

5) Find $f'(x)$ if $f(x)=\arctan\left(\sqrt{x}\right)$ :

Answer (4 points)

6) Find $\frac{dy}{dx}$ if $4x^2 + 3y^2 - 8 = x^3 + 5y^3$

Answer (4 points)

7) Find $\frac{dy}{dx}$ if $y = xe^{2x}$

Answer (4 points)

8) Find $\frac{dy}{dx}$ if $y = \ln(1 + \tan x)$

Answer (4 points)

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