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DAWSON COLLEGE
MATHEMATICS DEPARTMENT

FINAL EXAMINATION

201-NYA-05 CALCULUS I – SCIENCE

THURSDAY DECEMBER 20th 2018

(1) **(4+4+4 marks)** Find the limit, if it exists. If the limit does not exist explain why.

Do not use L'Hôpital's Rule.

(a) $\lim_{x \to}$ +

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(5) **(3 marks)** Find the values of c where the functions $\quad\quad = x$ and $= g\left(x\right) = 2x \quad 2x^2$ have parallel tangent lines at $x = c$.

(6) **(4+4+4+4 marks)** Find ' if: (Do not simplify your answers)

(a) $f\left(x\right) = \tan\left(\ \cos x\right) + e^{10} + \quad \mathrm{g}_4\left(3x\ +5\ \right)$

(b) $f\left(x\right) = \left(\dfrac{4\ \ ^2\ !\ 2x}{x^5\ \ 2\ \ ^3 + 1}\right)^{10}$

(c) $f\left(\ \ \right) = \sqrt{\ \ !\ \ \ \ ^2}\ \arcsin\left(5\ \ \right)$

(d) $f\ \ x\ =\ \cos\left(2x\right)\ \ ^x$

(7) **(4 marks)** If [redacted]

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(14) **(4+4 marks)** Find:

(a) $\left(\frac{2}{\#3x^2}\right.$! $^{5}+5e^{x}+4\sec^{2}$ $\begin{matrix}\% \\ \& \end{matrix}$

(b)