Name: (please print name as it appears in Canvas here →) _____ .

MATH 334: SURPRISE ATTACK MISSION 1: BACKGROUND & PREREQUISITES [5PTS]

Show all work. Box answers.

Problem 1 Please fill in the blanks to indicate where and circle how you earned credit for:

(a.) Calculus I (Math 131): _____. Residential Online

(b.) Calculus II (Math 132): _____. Residential Online

(c.) Calculus III (Math 231): _____. Residential Online

Problem 2 Factor $x^2 + 14x - 18$ and solve $x^2 + 14x - 18 = 0$.

Problem 3 Calculate the derivatives:

(a.) $\dfrac{d}{dx}\left[\dfrac{1}{\tan x + 2^x}\right]$

(b.) $\dfrac{d}{dx}\left[\ln\left(\dfrac{e^x(x^2+7)^8}{\sqrt{x+1}}\right)\right]$

Problem 4 Calculate the integrals:

(a.) $\displaystyle\int_0^1 \left(x + x^2\right)\, dx$

(b.) $\displaystyle\int x^2 \cos(x^3 + 7)\, dx$

Problem 5 Suppose the velocity of an object is given by $v(t) = te^{3t}$.

(a.) Calculate the acceleration of the object at time t.

(b.) Given the object is at $x = 2$ when $t = 0$, find the position at time t.

Problem 6 For the vector field $\vec{F}$, determine if $\vec{F}$ is conservative. If not, say not. If $\vec{F}$ is conservative then find the potential function f for which $\vec{F} = \nabla f$.

(a.) $\vec{F} = \langle y + x, y^2 \rangle$

(b.) $\vec{F} = \left\langle 2xy^2 + \dfrac{1}{x^2+1}, 2x^2y + \cosh(y) \right\rangle$