Math 3550 Quiz 1 Form C   Feb 7, 2020

1.) Circle T for true and F for false.

[4] 1a.) An equation for the plane through the three points (2, 4, -3), (3, 7, -1), (4, 3, 0) is $11x + y - 7z = 56$ F

$11(4) + 3 - 7(0) \neq 56$

[4] 1b.) If the cost function $C(x, y)$ of a box with base of length x and height y is given by

$$C(x, y) = 0.1(xy + \tfrac{100}{y} + \tfrac{100}{x})$$

then C is an independent variable and x and y are dependent variables. F

[12] 2.) Find the arc length of the curve $x = sin(2t)$, $y = cos(2t)$, $z = 8t$ from $t = 0$ to $t = \pi$.

$s = \int_a^b \sqrt{[x'(t)]^2 + [y'(t)]^2 + [z'(t)]^2} dt = \int_0^\pi \sqrt{[2cos(2t)]^2 + [-2sin(2t)]^2 + [8]^2} dt$

$= \int_0^\pi \sqrt{4cos^2(2t) + 4sin^2(2t) + 64} dt = \int_0^\pi \sqrt{4 + 64} dt = \int_0^\pi \sqrt{68} dt = \sqrt{68} t|_0^\pi = \sqrt{68}\pi$