MATH 16020: Applied Calculus 2 Quiz 11 Wed., Mar. 23, 2022

Please show **all** your work! Answers without supporting work will not be given credit. Write answers in spaces provided.

Name:_____

1. **[5 pts]** Find a function $z = f(x, y)$ and then use the total differential to approximate the quantity to 3 decimals.

$$\cos\left(\frac{\pi}{4} + 0.02\right)\sin\left(\frac{\pi}{4} - 0.03\right) - \cos\left(\frac{\pi}{4}\right)\sin\left(\frac{\pi}{4}\right)$$

Answer:_____

2. **[5 pts]** A soft drink can is a cylinder h cm tall with radius r cm. It's volume is given by the formula

$$V(r, h) = \pi r^2 h$$

A particular can is 14 cm tall and has a radius of 4 cm. If the height is **DECREASED** by 1.2 cm, use calculus to estimate the change in the radius needed so that the volume stays the same.

Answer:_____