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very good!!

CALCULUS II

FIRST PARTIAL

QUIZ 1A

Name: Ma. Alejandra Islas **ID#:** A01570159 **Date:** 17 / 01 / 18

Answer the following problems with complete procedure.

1. Find the **approximate** value of $\sqrt[3]{26.9}$ (20 pts)

$f(x) = \sqrt[3]{x}$ $x = 27$ $\Delta x = 0.1$

$f'(x) = x^{1/3}$

$f'(x) = \frac{1}{3\sqrt[3]{x^2}}$

$\sqrt[3]{26.9} \approx \sqrt[3]{x} + \frac{1}{3\sqrt[3]{x^2}}(\Delta x)$

$= \sqrt[3]{27} + \frac{1}{3\sqrt[3]{27^2}}(0.1)$

(-0.1)

$= 3 + 0.99$

$= 3.09$

$\sqrt[3]{26.9} \approx 3.09$

CORRECTION -5

$= \sqrt[3]{27} + \frac{1}{3\sqrt[3]{27^2}}(-0.1)$

$= 3 - 0.09$

$= 2.99$

$\sqrt[3]{26.9} \approx 2.99$

2. Given the equation $f(x) = x^2 - 2x + 3$ find the line tangent to the curve at $x = a = 0$. (20 pts)

$f'(x) = 2x - 2$

$f'(0) = 2(0) - 2$

$f'(0) = -2 = m$

$f(0) = (0)^2 - 2(0) + 3$

$f(0) = 3$

$3 = -2(0) + b$

$3 = 0 + b$

$b = 3$

$y = -2x + 3$

3. The edge of a cube was found to be 22 cm. with a possible error in measurement of 0.2cm. Estimate the maximum possible error in computing the volume of the cube (20 pts)

$v = l^3$

$v = (22)^3$

$v = 10{,}648 \text{ cm}^3$

$dv = 3l^2(0.2)$

$dv = 3(22)^2(0.2)$

$dv = 290.4 \text{ cm}^3$

$22 \pm 290.4 \text{ cm}^3$

4. A can is going to be modified in such a way that its height will change from 14cms to 14.6 cm but the diameter of the base will remain as 9cm.

a) Find the change in the volume of the can (20 pts)

$V = \pi r^2 h$

$V_1 = \pi (4.5)^2 (14)$

$V_1 = 890.64\ cm^3$

$V_2 = \pi (4.5)^2 (14.6)$

$V_2 = 928.81$

$\Delta V = 928.81 - 890.64$

$\Delta V = 38.17\ cm^3$

$\Delta V = 38.17\ cm^3$

b) Find the approximate change in the volume of the can (20 pts)

$V = \pi r^2 h$

$dV = (4.5)^2 \pi\ (dx)$

$dV = (4.5)^2 \pi\ (0.6)$

$dV = 38.17\ cm^3$

$dV = 38.17\ cm^3$