

KFUPM SEM II (Term 052) Name: _____ Serial #: _____

MATH 102-4-8 Quiz # 2 ID: #: _____

SOLVE THREE PROBLEMS ONLY

1. (5-points) Evaluate $\lim_{\max \Delta x_k \rightarrow 0} \sum_{k=1}^n \sqrt{4x_k^* - x_k^{*2}} \Delta x_k$ over the interval $[0, 4]$ by expressing it as a definite integral and applying appropriate formula from geometry.

2. (5-points) Find the average value of the function $f(x) = \frac{\cos x e^{\sqrt{\sin x}}}{\sqrt{\sin x}}$ over the interval $\left[\frac{\pi}{6}, \frac{\pi}{2}\right]$.

3. (5-points) Evaluate $\int_1^{\sqrt[4]{e}} \frac{dx}{x\sqrt{1-4(\ln x)^2}}$.

4. (5-points) If $F(x) = \int_{\sqrt{x}}^{\sqrt{2x}} \sin \pi t^2 dt$, find the value of $F' \left(\frac{1}{4} \right)$.

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MATH 102-4 Quiz # 2 ID: #: _____

SOLVE THREE PROBLEMS ONLY

1. (5-points) Evaluate $\lim_{\max \Delta x_k \rightarrow 0} \sum_{k=1}^n \sqrt{6x_k^* - x_k^{*2}} \Delta x_k$ over the interval $[0, 6]$ by expressing it as a definite integral and applying appropriate formula from geometry.

2. (5-points) Find the average value of the function $f(x) = \frac{\sin x e^{\sqrt{\cos x}}}{\sqrt{\cos x}}$ over the interval $\left[0, \frac{\pi}{3}\right]$.

3. (5-points) Evaluate $\int_1^{\sqrt[6]{e}} \frac{dx}{x\sqrt{1-9(\ln x)^2}}$.

4. (5-points) If $F(x) = \int_{\sqrt{x}}^{\sqrt{2x}} \cos \pi t^2 dt$, find the value of $F'\left(\frac{1}{4}\right)$.