GROUP QUIZ 2 QUESTIONS

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Identify the following limits as Riemann sums, and evaluate the limits. Show all algebraic reasoning.

[a] $$\lim_{n\to\infty}\frac{5}{n}\left[\frac{1}{\sqrt{4+\frac{5}{n}}}+\frac{1}{\sqrt{4+\frac{10}{n}}}+\cdots+\frac{1}{3}\right]$$

[b] $$\lim_{n\to\infty}\frac{3}{n}\left[\frac{1}{\left(2+\frac{3}{n}\right)^2}+\frac{1}{\left(2+\frac{6}{n}\right)^2}+\frac{1}{\left(2+\frac{9}{n}\right)^2}+\cdots+\frac{1}{25}\right]$$

Find the average value of $f(x)=\dfrac{6x-1}{\sqrt{x}}$ on $[1, 4]$. Simplify your answer.

Find the average value of $f(x)=\left(x^{\frac{2}{3}}-2x^{\frac{1}{3}}\right)^2$ on $[0, 1]$. Simplify your answer.

Find the area between the graph of $f(x)=x^2-2x$ and the x-axis on $[0, 3]$.

Find the area between the graph of $f(x)=x^2-x$ and the x-axis on $[0, 3]$.

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