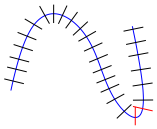
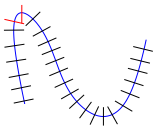


M421 HW 2



Due Friday Sept. 21

From Wade

Section	Page Number	Problems
5.2	124-125	2, 3, 5a, 8
5.3	131-133	3c, 4abd, 8

Non-book Exercises

1) For $n = 1, 2, \ldots$, define $g_n(x) = 2xne^{-nx^2}$ for $x \in [0, 1]$.

(a) Show that $\forall x \in [0, 1]$, $\lim_{n\to\infty} g_n(x) = 0$.

(b) Using the Fundamental Theorem of Calculus to evalutate the integrals on the left, show that

$$\lim_{n\to\infty} \int_0^1 g_n(x)dx \neq \int_0^1 \left(\lim_{n\to\infty} g_n(x)\right) dx.$$

2) Show that if $f \in \mathcal{I}[a, b]$ then $g(x) \equiv \sin(f(x)) \in \mathcal{I}[a, b]$.