Homework Set 2 - $\{1, 2, 3, 4, 5\}$

Use an $\epsilon - \delta$ proof to prove that $\lim\limits_{x \to 5} (2x + 5) = 15$.

$\blacksquare$

Use an $\epsilon - \delta$ proof to prove that $\displaystyle\lim_{x \to -5} (-2x - 20) = -10$.

■

Use an $\epsilon - \delta$ proof to prove that $\lim_{x \to 0} x^2 \sin \frac{1}{x} = 0$.

■

Use an $\epsilon - \delta$ proof to prove that $\lim\limits_{x \to \pi} \left(x^2 - 2\pi x \right) = -\pi^2$.

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Prove that if $f(x) = 1$ for rational x, and if $f(x) = 0$ for irrational x, then $\lim\limits_{x \to a} f(x)$ does not exist for any a.

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