Additional Questions for Homework on Section 2.4.

A. Let $f(x) = \begin{cases} \sqrt{1-x^2} & \text{if } -1 \le x \le 1 \\ x^2 - 4x + 3 & \text{if } 1 < x \le 2 \\ 3x - 10 & \text{if } x > 2 \end{cases}$

Find the following limits or identify that they do not exist.

(i) $\lim_{x \to 1.5^-} f(x)$

(ii) $\lim_{x \to 1^-} f(x)$

(iii) $\lim_{x \to 2^-} f(x)$

(iv) $\lim_{x \to 2^+} f(x)$

(v) $\lim_{x \to 2} f(x)$

(vi) $\lim_{x \to 1} f(x)$

(vii) $\lim_{x \to 2.25} f(x)$

B. Let $g(x) = \begin{cases} 4 + \sin x & \text{if } x < 0 \\ \pi & \text{if } x = 0 \\ (x-2)^2 & \text{if } 0 < x < 4 \\ \sqrt{x} & \text{if } x \ge 4 \end{cases}$

Find the following limits or identify that they do not exist.

(i) $\lim_{x \to 4^-} g(x)$

(ii) $\lim_{x \to 6} g(x)$

(iii) $\lim_{x \to 0} g(x)$

(iv) $\lim_{x \to -\frac{\pi}{2}^+} g(x)$

C. Find the following limits or identify that they do not exist.

(i) $\lim_{x \to 4^-} x\lfloor x \rfloor$

(ii) $\lim_{x \to 4^+} x\lfloor x \rfloor$

(iii) $\lim_{x \to 4} x\lfloor x \rfloor$

(i) $\lim_{x \to 0} x\lfloor x \rfloor$