Calculus Homework Assigment 2

Class 班: _____

Student Number 學號: _____

Name 姓名: _____

1. Find the limit.

$$\lim_{x\to -3} \frac{2-\sqrt{x^2-5}}{x+3}$$

[§2.2 #41]

2. If $\sqrt{5-2x^2} \le f(x) \le \sqrt{5-x^2}$ for $-1 \le x \le 1$, find $\lim_{x\to 0} f(x)$. [§2.2 #63]

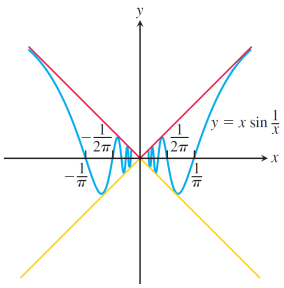
3. Prove the limit statement.

$$\lim_{x\to 0} \sqrt{4-x} = 2$$

[§2.3 #40]

4. Prove the limit statement.

$$\lim_{x\to 0} x \sin\frac{1}{x} = 0$$



[§2.3 #49]

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5. Find the limits.

a. $\lim_{x\to 0^+} \dfrac{|\sin x|}{\sin x}$

b. $\lim_{x\to 0^-} \dfrac{|\sin x|}{\sin x}$

c. $\lim_{x\to 0} \dfrac{|\sin x|}{\sin x}$ [§2.4 #19]

6. Find the limit.

$$\lim_{x\to 0} \frac{1-\cos 3x}{2x}$$

[§2.4 #45]

7. For what values of a and b is

$$f(x) = \begin{cases} -2, & x \le -1 \\ ax - b, & -1 < x < 1 \\ 3, & x \ge 1 \end{cases}$$

continuous at every x? [§2.5 #45]

8. Show that the equation $x^3 - 15x + 1 = 0$ has three solutions in the interval $[-4, 4]$. [§2.5 #49]

(The end 結束)