Kerry Ojakian's MTH 31 Class
Class Assignment #4

See pictures in the textbook for the following (these were in last classwork - now do the complete problem).

1. Section 2.2 (page 156): Exercises 46 - 49.

2. Section 2.2 (page 157): Exercises 59 -64.

3. Section 2.2 (page 158): Exercises 76

Compute the following limits (some of these were in last classwork - now do the complete problem).

4. Let $f(x) = \begin{cases} -2x & \text{if } x \leq -1 \\ x+3 & \text{if } x > -1 \end{cases}$

   Find $\lim_{x\to 0} f(x)$ and $\lim_{x\to -1} f(x)$ and $\lim_{x\to -1^-} f(x)$ and $\lim_{x\to -1^+} f(x)$

5. Let $f(t) = \begin{cases} t^2 & \text{if } t \leq -2 \\ t^3 & \text{if } t > -2 \end{cases}$

   Find $\lim_{t\to -3} f(t)$ and $\lim_{t\to -2} f(t)$ and $\lim_{t\to -2^-} f(t)$ and $\lim_{t\to -2^+} f(t)$

In the following exercises, sketch the graph of a function with the given properties.

6. Section 2.2 (page 158): Exercises 76

7. $\lim_{x\to 0^-} f(x) = 0$ and $\lim_{x\to 0^+} f(x) = 1$

Calculate the limits.

8. Find $\lim_{x\to+\infty} 3x^2 =$

9. Find $\lim_{y\to-\infty} 3y^4 =$

10. Find $\lim_{x\to+\infty} 3 + \frac{1}{x} =$

11. Find $\lim_{t\to-\infty} 3 + \frac{1}{t} =$

12. Find $\lim_{x\to+\infty} 1 - \frac{5}{x^4} =$

13. Find $\lim_{x\to-\infty} -5 - \frac{4x}{x^6} =$

14. Find $\lim_{u\to-\infty} \frac{5}{(u-2)} =$

Calculate the limits.

15. Find $\lim_{x\to4} \frac{3}{(x-4)^2} =$

16. Find $\lim_{x\to2^+} \frac{3}{(x-2)^3} =$

17. Find $\lim_{t\to2^-} \frac{3}{(t-2)^3} =$

18. Find $\lim_{x\to2} \frac{3}{(x-2)^3} =$

19. Find $\lim_{u\to-2} \frac{-1}{u+2} =$

20. Find $\lim_{x\to-3} \sqrt{u+4} =$

21. Find $\lim_{x\to-4} \sqrt{u+4} =$

22. Find $\lim_{x\to-4^+} \sqrt{u+4} =$

In the following exercises, sketch the graph of a function with the given properties.

23. $\lim_{x\to0^-} f(x) = +\infty$ and $\lim_{x\to0^+} f(x) = -\infty$ and $f(0) = 0$.

24. $\lim_{x\to-3} f(x) = -\infty$ and $\lim_{x\to+\infty} f(x) = 4$ and $f(1) = 6$.