AP Calc AB Ch 2 Review 2

*p.107 know how to work with "e" the natural base
*know how to find:
- limits
- slopes of tangents
*know the squeeze theorem p.85 #35, 36
*p.95 #3-4
*find the average rate of change over a time interval (like quiz)
*write the equation of a TANGENT and a NORMAL to a curve at an x-value
*know IVT similar to p.107 47-52, p.109 27-28, know how to use calc to find zeros
*know how to graph with greatest integer, p.109 #30, p.86 49-51
*be able to find a point of discontinuity
*be able to look at a graph and determine if continuous and where it is continuous
*be able to find ave velocity and instantaneous velocity
*#1 on first review…be able to look at graphs and determine limits
*p.107 #41, study the one we did in notes for section 2.5

Sample Problems
Calc OK
1. If $1-x^4 \le f(x) \le 1 + 2x^2$, find the $\lim_{x\to 0} f(x)$

2. Find the average rate of change of $f(x) = 1 - x^4$ over [-1, 4].

3. Write the equation of the tangent to $f(x) = 2x^2 - 3$ at x = 1. What is the equation of the normal to this?

4. Use IVT to show that $x^5 - 6x^2 + 2x + 1$ has at least 1 solution. Next, find all real solutions.

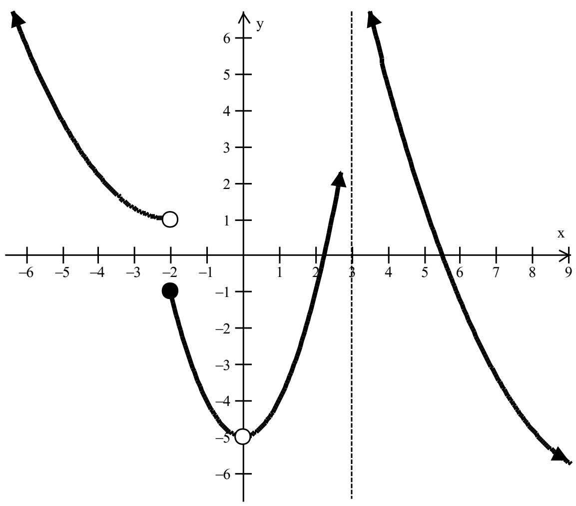
5. Graph $f(x) = [\![x]\!] + 2$ on $-5 \le x \le 5$

NO Calc
1. Let $f(x) = 3x^2 - 5x$ and P the point (2, 2). Find the slope, the equation of tangent and equation of normal to f(x) at P.

2. $f(x) = \begin{cases} a - x^2 & x \le 1 \\ 2x & x > 1 \end{cases}$
a) find $\lim_{x\to 1-} f(x)$ b) find $\lim_{x\to 1+} f(x)$ c) Find all values of a that make f continuous at 1.

3.

Below is the graph of $f(x)$



$\lim_{x\to-\infty} f(x) =$ $\lim_{x\to\infty} f(x) =$

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

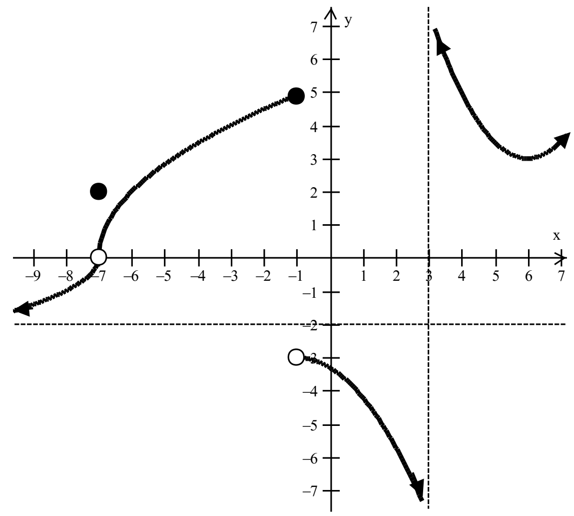
$\lim_{x\to0^-} f(x) =$ $\lim_{x\to0^+} f(x) =$ $\lim_{x\to0} f(x) =$

$\lim_{x\to3^-} f(x) =$ $\lim_{x\to3^+} f(x) =$ $\lim_{x\to3} f(x) =$

On what intervals is $f(x)$ is continuous?

4.

Below is the graph of $g(x)$



$\lim_{x\to-\infty} g(x) =$ $\lim_{x\to\infty} g(x) =$

$\lim_{x\to-7^-} g(x) =$ $\lim_{x\to-7^+} g(x) =$ $\lim_{x\to-7} g(x) =$

$\lim_{x\to-1^-} g(x) =$ $\lim_{x\to-1^+} g(x) =$ $\lim_{x\to-1} g(x) =$

$\lim_{x\to3^-} g(x) =$ $\lim_{x\to3^+} g(x) =$ $\lim_{x\to3} g(x) =$

On what intervals is $g(x)$ is continuous?

5. Use the graphs above to find:

a) find $\lim_{x\to2}[f(x)\cdot g(x)]$ b) find $\lim_{x\to2}\frac{g(x)}{f(x)}$ c) find $\lim_{x\to-7} x + g(x)$

6. The table below shows several measurements of the velocity of motorcycle driving on a straight road. $v(t)$ is continuous on the interval $[3,17]$.

t (min)	3	5	7	11	13	17
$v(t)$ (meters/min)	221.7	321.4	457.8	563.9	421.5	297.2

What is the least number of times where $v(t)$ is exactly 325 meters/min? Justify your answer.