Summer Assignment for AP Calculus AB
Due 1st day of school

1) Purchase the following review book: The Princeton Review Cracking the AP Calculus AB Exam
ISBN-13: 978-0804126120. This is the only book you will need to purchase for this course.

2) Do all of the attached worksheets.

3) Join the AP Calculus Edmodo group
AP Calculus AB code: 9x4gyv

This is how we will communicate over the summer.

There will be a free optional AP calculus boot camp tentatively scheduled from August 11th from 8:30-11:00. These dates might change. See edmodo for updated information.

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AP Calculus Summer Worksheet

On numbers 1-7, graph the parent function of each set using your calculator. Draw a quick sketch on your paper of each equation in the family. Check your sketch with the graphing calculator.

1) Parent Function: $y=x^2$

a) $y=x^2+5$
b) $y= (x+10)^2$
c) $y= 4x^2$
d) $y= -x^2$
e) $y= (x+4)^2- 8$
f) $y= (1/3)(x+6)^2- 6$
g) $y= 0.25x^2$
h) $y= -(x+3)^2- 6$

2) Parent Function: y= sin(x) (set mode to radians)

a) y = sin(2x)
b) y = sin(x) - 2
c) y= 2sinx

3) Parent Function: y= cos(x) (set mode to radians)

a) y= 2cos(x)+2
b) y= cos(x/2)
c) y= -2cos(x)-1

4) Parent Function: $y=x^3$

a) $y= x^3+2$
b) $y=-x^3$
c) $y= (x-4)^3$
d) $y= -2(x+2)^3+1$
e) $y= x^3+x$

5) Parent Function: $y = \sqrt{x}$

a) $y = \sqrt{x} - 2$
b) $y = \sqrt{-x}$
c) $y = \sqrt{6 - x}$
d) $y = -\sqrt{-x}$
e) $y = \sqrt{2x - 6}$
f) $y = -\sqrt{4 - x}$

6) Parent Function: $y = \ln(x)$

a) $y = \ln(x + 3)$
b) $y = \ln(x) + 3$
c) $y = \ln(x - 2)$
d) $y = \ln(-x)$
e) $y = -\ln(x)$
f) $y = \ln(|x|)$
g) $y = \ln(2x) - 4$
h) $y = -3\ln(x) + 1$

7) Parent Function y = 1/x

a) y = 1/(x – 2)
b) y = -1/x
c) y = 1/(x+4)
d) y = 2/(5 – x)

8) Resize your viewing window to [0,1] x [0,1]. Graph all of the following functions in the same window. List the functions from the highest graph to the lowest graph. How do they compare for values of x > 1?

a) $y = x^2$
b) $y = x^3$
c) $y = \sqrt{x}$
d) $y = x^{2/3}$
e) $y = |x|$
f) $y = x^4$

9) Given: $f(x) = x^4 - 3x^3 + 2x^2 - 7x - 11$. Find all roots to the nearest 0.001.

10) Given $f(x) = 3sin2x - 4x + 1$from [-2π, 2π]. Find all roots to the nearest 0.0001.

Solve the following inequalities:

11) $x^2 - x - 6 > 0$

12) $x^2 - 2x - 5 \geq 3$

13) $x^3 - 4x < 0$

For each of the following (#14 – 17)

a) Sketch the graph of f(x)
b) Sketch the graph of |f(x)|
c) Sketch the graph of f(|x|)
d) Sketch the graph of f(2x)
e) Sketch the graph of 2f(x)

14) f(x) = 2x + 3

15) $f(x) = x^2 - 5x - 3$

16) f(x) = 2sin(3x)

17) $f(x) = -x^3 - 2x^2 + 3x - 4$

18) Let f(x) = sinx and g(x) = cosx

a) Sketch the graph of f^2
b) Sketch the graph of g^2
c) Sketch the graph of $f^2 + g^2$

19) Given: f(x) = 3x + 2 and g(x) = -4x – 2. Find the point of intersection.

20) Given $f(x) = x^2 - 5x + 2$ and g(x) = 3 – 2x. Find the coordinates of any points of intersection.

21) How many times does the graph of y = 0.1x intersect the graph of y = sin(2x)?

22) Given $f(x) = x^4 - 7x^3 + 6x^2 + 8x + 9$

a) Determine the x- and y- coordinates of the lowest point on the graph.
b) Size th x-window from [-10, 10]. Find the highest and lowest values of f(x) over the interval [-10, 10].

23) Evaluate each expression without using a calculator:

a) lne^2
b) ln√e
c) $lne^4 - lne^2$

24) Rewrite as a single natural log: ln8 – ln 4

25) Solve for x:
a) $e^x = 7$
b) $e^{2x+3} = 8$
c) $4e^{x-12}=1$