AP CALCULUS AB

Summer Assignment

The following questions are intended to review some of the necessary skills you will need to enter AP Calculus AB. Solve each of them in a separate piece of paper showing ALL WORK. We will go over all of them at the beginning of the course, but a grade will be given to those who has completed them in advance. Answers Key is attached along with this assignment to verify your solutions. Good Luck!!!

1. Let L represent the line $y = \frac{2}{3}x + 5$. (a) Graph L. Write the equation of the line through (1,0) that is (b) parallel to L, (c) perpendicular to L.

2. Find the slope and y-inetercept for the linear function described by the table.

x	-3	6	15
<i>f</i> (x)	6	9	12

3. Find the solutions of the following quadratic equations using <u>factoring</u>.

(a) $4x^2 + 6x = 0$	(b) $x^2 - 16x = 0$
(c) $9x^2 - 4x = 0$	(d) $x^2 - 1 = 0$
(d) $25x^2 - 16 = 0$	(e) $x^2 - 2x - 24 = 0$
(f) $x^2 - x - 6 = 0$	(g) $9x^2 - 6x + 1 = 0$
(h) $6x^2 + x - 2 = 0$	(i) $3x^2 = x + 4$
(j) $3x^2 + 45 = 24x$	(k) $2x^2 - 14x = 16$

4. Determine the following information from the given graph of the function f. (a) Domain and range (c) Intervals of increasing and decreasing (d) Intervals where $f(x) \ge 0$ (e) Intervals where f is discontinuous (f) x and y intercepts (g) Relative and absolute extrema (h) Intervals where f is concave up (down) (i) Points of inflection (j) Vertical and horizontal asymptotes of f (k) f(2) =? (l) In how many point is f(x) = 1?



5. Graph the polynomial functions by using their end behavior, roots and multiplicity, and y-intercept.

(a) $f(x) = x^4 - 2x^2 + 1$ (b) $f(x) = x^3 + 2x^2 - 9x - 18$ (c) $f(x) = x^3 + x^2 - 4x - 4$ (d) $f(x) = x^4 - 9x^2$

(e) $f(x) = -x^4 + 16x^2$

6. Solve the following inequalities. Graph their solutions on the number line.

(a) $4x^2 - 4x + 1 \ge 0$ (b) $x^6 - 16x^4 \le 0$ (c) $x^3 + 2x^2 - x - 2 \ge 0$

7. <u>Solve</u> the following absolute value and radical equations.

(a) 4|1-2x|-20 = 0 (b) $2\left|4-\frac{5}{2}x\right|+6 = 18$ (c) $\sqrt{3x+18} = x$ (d) $\sqrt{x+3} = x-3$ 8. Solve the following exponential equations. (a) $8^{x+3} = 16^{x-1}$ (b) $8^{1-x} = 4^{x+2}$ (c) $e^{3x} + 5 = 6$ (d) $7e^{2x} - 5 = 5$

9. Expand or **condense** the following logarithmic expressions.

(a)
$$ln\left[\frac{x^{4}\sqrt[3]{x+5}}{(x-2)^{2}}\right]$$

- **(b)** $\frac{1}{5}[5ln(x+9) lnx ln(x^2 9)]$
- 10. Solve the following logarithmic equation.
- (a) $\ln(3x) = 4$ (b) $\ln(4x-1) = 3$
- (c) $ln\sqrt{2-7x} = 1$. (d) ln4 + ln(1-2x) = 0

11. Fill the <u>Unit Circle</u> in radians and evaluate the following expressions.



12. Solve the equations in the interval $0 \le x < 2\pi$.

- (a) $5sinx = 3sinx + \sqrt{3}$
- (b) $\cos x + 2\cos x \sin x = 0$

13. Sketch the graph of each of the parent functions. For trigonometric functions, graph two periods.

(a) $y = \sqrt{x} + 1$ (b) $y = e^{x-1}$ (c) y = -lnx(d) y = 2sinx (e) y = -cosx (f) $y = \frac{1}{x+2} + 2$









(a) 0 (b) 6

