WESTCHESTER
COUNTRY DAY SCHOOL

AP Calculus
2026 Summer Assignment

Dear AP Calculus students,

The summer assignment serves as a review of pre-calculus and preparation for beginning our AP Calculus course in August. The assignment is to be submitted on Monday, August 31st. The grade you receive on the summer assignment will be your grade for homework week 1. To receive full credit, all problems must include supporting work. These problems should be completed independently, not with another person. We will begin the "Calculator Problems" worksheet together in class. I recommend doing all other worksheets prior to the first day of class. There will be some class time to discuss questions from the worksheets.

Please let me know if you have any questions. I look forward to our study of calculus next year.

All the best,

Mrs. Moye

AP Calculus Worksheet
Sections D1, D2

(1 – 7) Solve and graph on a real number line. Give your answers in interval notation where appropriate.

1. $| 2x - 1 | < 5$

2. $| 2x - 1 | \geq 5 - x$

3. $\frac{x - 1}{x + 2} \leq 3$

4. $-2 < \frac{-x}{2} \leq 1$

5. $x(x - 2) < 3$

6. $x^2 + 4x + 3 \geq 0$

7. $| 3x - 7 | = 5$

8. Find y so that the distance between (0, 0) and (3, y) is 8.

9. Find x so that the distance from the origin to the point (x, -4) is 5.

10. Write the equation of the circle with center at (3, -1) and passing through the point (4, 1).

11. Write the equation of the circle which has (5, 6) and (3, -2) as endpoints of one diameter.

12. Write the equation of the circle which is tangent to both axes, has a center in Quadrant II, and a radius = 4.

AP Calculus Worksheet
Sections P1, P2

(1 – 4) Check for symmetry about each axis and about the origin. Justify your answer. Then give the intercepts of each equation.

1. $x^2y - x^2 + 4y = 0$

2. $y = 3x^3 - 24$

3. $y = x^2 + x - 2$

4. $xy = 4$

5. Find the points of intersection of the graphs of $x^2 + y^2 = 5$ and $x - y = 1$.

6. Write the equation of the line through (2, 3) and (-2, -2).

7. Write the equation of the line with y-intercept 3 and slope $-\frac{2}{3}$.

8. Write the equation of the line through (2, 1) and perpendicular to the line $2x + 5y = 4$.

9. Write the equation of the perpendicular bisector of the line through (-2, 5) and (0, 1).

AP Calculus Worksheet
Section P3

(1 – 3) Given $f(x) = 1/x$ and $g(x) = x^2 - 1$, find

1. $f \circ g$

2. $\dfrac{g(x + \Delta x) - g(x)}{\Delta x}$

3. $f + g$

(4, 5) State the domain of each function using interval notation.

4. $f(x) = \sqrt{x - 1}$

5. $f(x) = \dfrac{x}{x^2 - 1}$

(10, 11) Determine whether f is even or odd or neither. Justify your answer.

6. $f(x) = 2x^2 - 1$

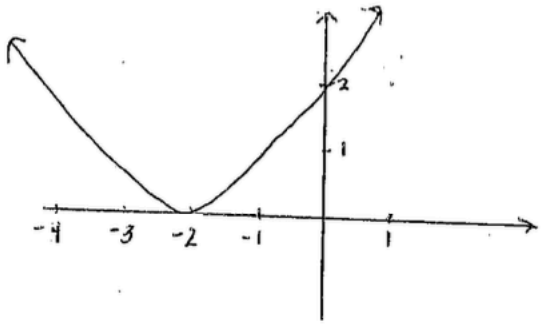
7. $f(x) = x^3 + 2x$

(8 – 10) The graph of a function f with domain [-4, 1] is shown. Sketch the graph of each equation listed on a separate set of coordinate axes.

8. $-f(x) = y$

9. $f(x) - 3 = y$

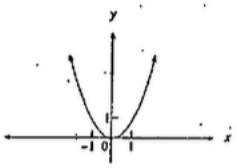
10. $f(x - 1) = y$

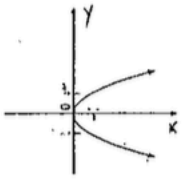


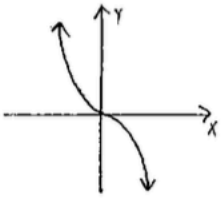
11. Sketch the graph.

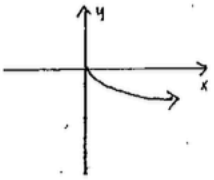
$$f(x) = \begin{cases} x - 1 & \text{if } x \le -1 \\ x^2 & \text{if } -1 < x < 1 \\ -x + 2 & \text{if } x \ge 1 \end{cases}$$

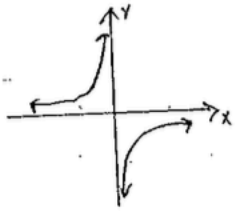
(12 – 18) Match each graph with its equation. Write the letter for each answer next to the graph.

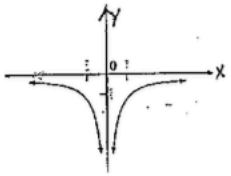
12. 

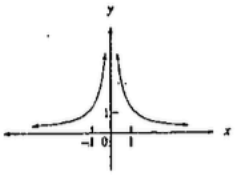
13. 

14. 

15. 

16. 

17. 

18. 

a. $y = x^2$
b. $x = y^2$
c. $y = x^3$
d. $y = 1/x$
e. $y = -x^3$
f. $y = 1/x^2$
g. $y = -1/x^2$
h. $y = \sqrt{x}$
i. $y = -\sqrt{x}$
j. $y = -1/x$

AP Calculus Worksheet
Section D3

I. Complete the table.

angle	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π
sin																	
cos																	
tan																	

II. Find the solutions of each equation on the interval $[0, 2\pi)$.

1. $\cos^2 x - \sin^2 x = 0$
2. $\sin^2 x + \sin x - 2 = 0$
3. $2 \sin x \cos x = \cos x$

III. Sketch one cycle of each function.

1. $y = 2 \cos x$
2. $y = -\sin x$
3. $y = 2 \cos (x + \frac{\pi}{2})$

Calculator Problems

Round calculations to 3 decimal places.

1. Solve: $2x^2 - x + 2 \leq 4$

2. $f(x) = x^2 - x - 3$ and $g(x) = -x^2 - 2x - 1$. Find the coordinates of all points of intersection of f and g.

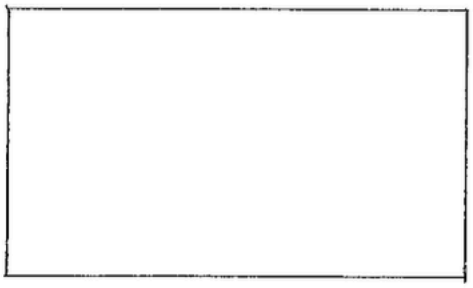
3. Describe 2 different graphical methods that can be used to solve #1 and #2 above.

4. Find the zeroes: $y = -x^4 - 5x^2 + x + 4$

5. $f(x) = -x^3 + 2x^2 - x + 1$
   Evaluate: f(0)
   f(-1)
   f(2.4)
   f(.256)

6. Choose an appropriate viewing window on your graphing calculator and graph the following function. Then copy the graph in your viewing window onto the rectangle below and complete the chart based on your viewing window.

   $P(t) = 20t + 10te^{\frac{-t}{3}}$, $0 \leq t \leq 15$



x min = _____
x max = _____
x scl = _____
y min = _____
y max = _____
y scl = _____

AP Calculus Worksheet
Review

(1 – 3) Solve each inequality and give your answer in interval notation. Then graph your solution on a real number line.

1. $|2x + 1| > 5$

2. $3x^2 + 5x < 2$

3. $\dfrac{3x + 2}{2x - 7} \leq 0$

(4 – 6)

4. Write the equation of the line through (7, -3) and perpendicular to the line with equation $2x - 5y = 8$.

5. Determine the set of all values such that the slope of the line through (t, 4) and (1, 3 – 2t) is less than 5.

6. Write the equation of the circle that has (4, -3) and (-2, 7) as endpoints of one diameter.

(7, 8) State the domain of each function using interval notation.

7. $f(x) = \dfrac{1}{\sqrt{x}\,(x - 2)}$

8. $f(x) = \sqrt{4 - x^2}$

(9, 10) Consider each function. Is it even or odd or neither? Justify your answer.

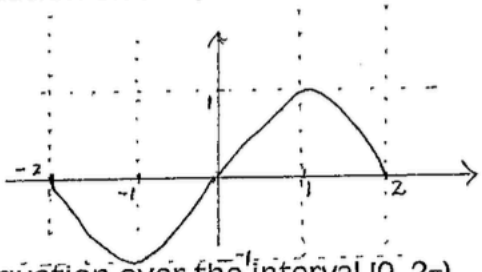
9. $f(x) = \cos x$

10. $f(x) = \begin{cases} 1 & \text{if } x > 0 \\ -1 & \text{if } x < 0 \end{cases}$

11. Consider the equation $y = x^2 + 4$
    a) Sketch the graph of the equation.
    b) Discuss symmetries with respect to the x-axis, the y-axis, and the origin.
    c) Identify the intercepts of the graph.
    d) Tell if the function is even, odd, or neither and justify your answer.

12. If $f(x) = \frac{1}{3x + 1}$ and $g(x) = \frac{2}{x^2}$, find $g \circ f$.

13. Consider the graph of the function f shown below. Sketch the graph of each equation on a separate set of axes.
    a) $y = f(x + 1)$
    b) $y = f(x) + 1$
    c) $y = -f(x)$



(14, 15) Solve each equation over the interval $[0, 2\pi)$.

14. $2 \sin x + 1 = 2$

15. $\cos^2 x - \cos x = 0$