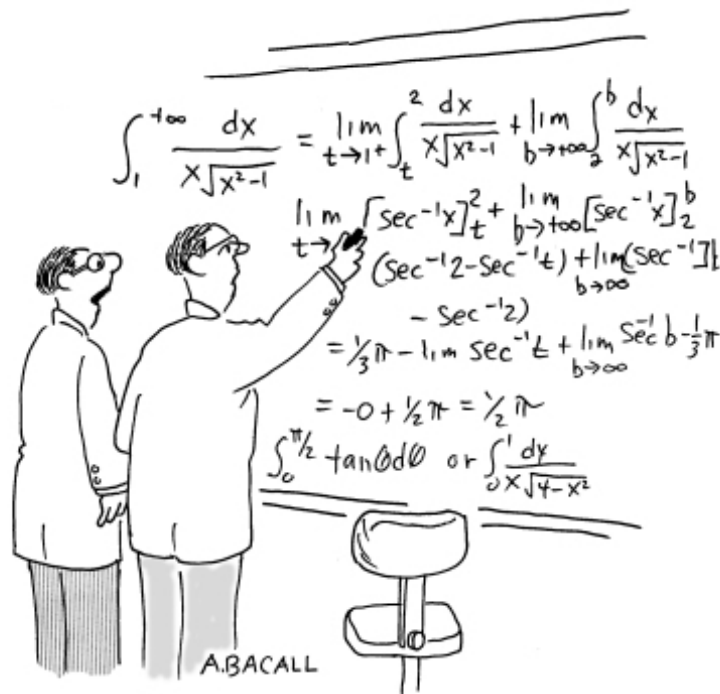


Calculus

Summer Assignment



"Okay, you've proven your point.
Spare me the details."

Welcome to Calculus! This review assignment is designed to refresh your Algebra 1, Geometry, and Algebra 2 skills. It includes information that was taught in previous courses and will be used throughout the upcoming school year. As you prepare, you may need to seek help by accessing the suggested resources or links provided.

IMPORTANT: Read this page first...

INSTRUCTIONS:

1. Complete all sections and problems in this packet on your own.
2. Make sure to show your work in your notebook to earn credit.
3. Calculators – Please try to complete the problems in this packet without the use of a calculator as you will not be able to use one on the assessment given in class. (See more information about this assessment below)

GRADING:

- On the first day of school, your math teacher will check for full completion of this Summer Assignment and the supporting work for your responses (no work = no credit). This part will be weighted at 50% - this is the grade that represents your effort and following of directions.
- Your teacher will then review the assignment and provide remediation as needed.
- Upon completion of your teacher's review, you will be given an assessment (a "test") based on the topics covered in this assignment. This assessment will be weighted at 50% - this is the grade that represents your mastery of the skills.
- The two weighted scores combined will count as one Project grade for the 1st trimester.
- Acceptance of late assignments will be limited and subject to point deductions.

We are looking forward to meeting you in September. Go Bulldogs!

RESOURCES & REFERENCE MATERIALS:

[http://www.calcchat.com/book/Calculus-](http://www.calcchat.com/book/Calculus-9e/)

[9e/ http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/2178.html](http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/2178.html)

<http://www.calculus.org/>

<http://cow.math.temple.edu/>

<http://www.mathsisfun.com/calculus/> <http://www.wolframalpha.com/widgets/view.jsp?id=dc816cd78d306d7bda61f6facf5f17f7> <http://www.wolframalpha.com/widgets/view.jsp?id=c44e503833b64e9f27197a484f4257c>

Part 1: Solving Equations: Solve for x

1. $\frac{3}{4}x + \frac{5}{6} = 5x - \frac{125}{3}$

2. $\frac{6x-7}{4} + \frac{3x-5}{7} = \frac{5x+78}{28}$

3. $x^3 - 6x^2 - 27x = 0$.

4. $\sqrt{x+1} - 3x = 1$

5. $-\frac{2}{x^2} + \frac{1}{2(x-3)^2} = 0$.

6. Solve the following quadratic equations. Give exact answers.

a. $x^2 + 3x = 2$

b. $5x^2 - 2x + 1 = 0$

c. $3x^2 = 5x - 6$

Part 2: Equation of a line

7. For each of the following find the equation of the line satisfying the given information.

Write your answers in point-slope form.

a. Line through the point (2, 3) with slope of $-\frac{2}{3}$.

b. Line through the points (2, 3) and (-3,2).

c. The vertical line through the point (-3,2).

d. The horizontal line through the point (-3,2).

e. The line through the point (2, 3) that is parallel to the line $2x - 5y = 4$.

f. The line through the point (2, 3) that is perpendicular to the line $2x - 5y = 4$.

Part 3: Simplify Expression

8. Rationalize the numerator in each expression:

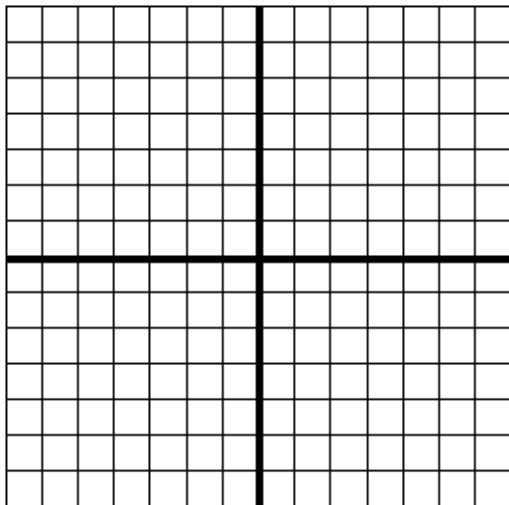
a. $\frac{\sqrt{x}}{x+2}$

b. $\frac{\sqrt{x-4}+3}{x}$

c. $\frac{\sqrt{x+5}-2}{2x+1}$

Part 4: Transformations: Sketch the following graphs

10. The function of $f(x)$ is defined: $H(x) = \begin{cases} 1, & x > 0 \\ -1, & x < 0 \end{cases}$



Sketch the following graphs:

a.) $H(x) + 3$

b.) $H(x - 1)$

c.) $-2H(x)$

d.) $-H(x - 1) + 3$

Part 5: Operations with functions:

Find each of the following functions or values given $f(x)$ and $g(x)$:

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

$$g(x) = 2x + 1$$

11. $f(x) - g(x)$

12. $f(x)g(x)$

15. $f(g(x))$

13. $f(g(1))$

16. $g(f(x))$

14. $g(f(5))$

17. $g(g(x))$

Part 6: Odd, Even, and Inverse Functions: Determine whether each function is odd, even, or neither. Identify the degree and leading coefficient of each function.

18. Is this function odd, even, or neither?

$$f(x) = x^6$$

19. Is this function odd, even, or neither?

$$f(x) = 2x^3 + x - 1$$

20. Is this function odd, even, or neither?

$$f(x) = 3x^2 + 2x - 10$$

21. If $f(x) = \sqrt{5x - 7}$, find the inverse.

22. If $f(x) = \frac{6-5x}{7}$, find the inverse.

23. If $f(x) = 6^{3+2x}$, find the inverse.

Part 7: System of Equations: Find where the graphs intersect

24. $f(x) = 2x + 3$

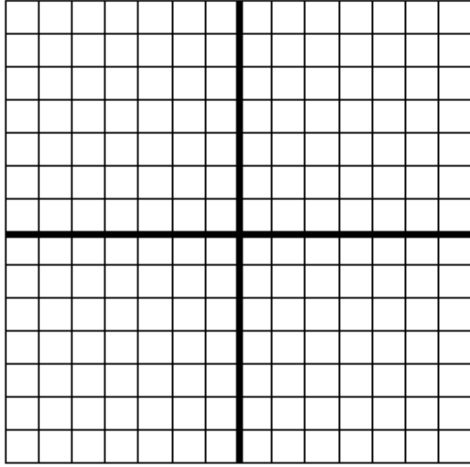
$$g(x) = -.5x + 7$$

25. $f(x) = x^2$

$$g(x) = x + 2$$

Part 8: Piecewise Functions: Sketch the graph of $f(x)$ and find the indicated values:

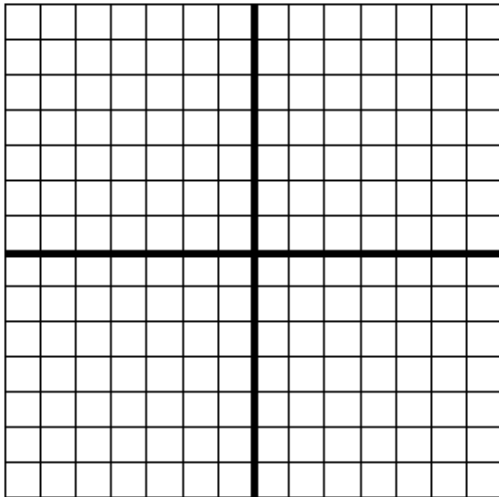
$$26. f(x) = \begin{cases} x - 2, & x < 0 \\ x^2 + 1, & x \geq 0 \end{cases}$$



- a. $f(-4)$
- c. $f(f(-3))$

- b. $f(0)$
- d. $f(f(0))$

$$27. f(x) = \begin{cases} 6 - x, & x \leq 3 \\ 3x - 6, & x > 3 \end{cases}$$

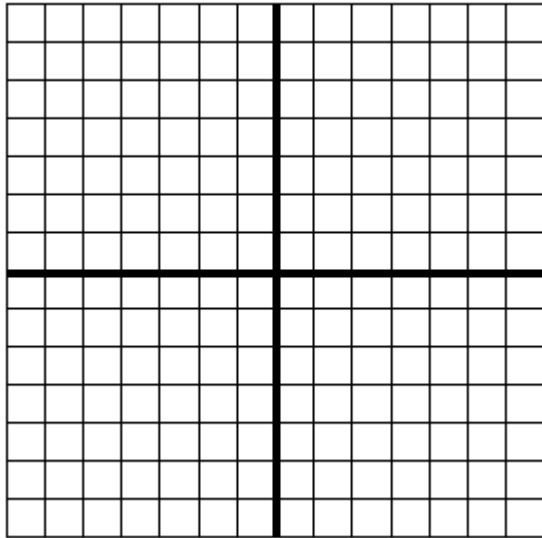


- a. $f(3)$
- c. $f(f(0))$

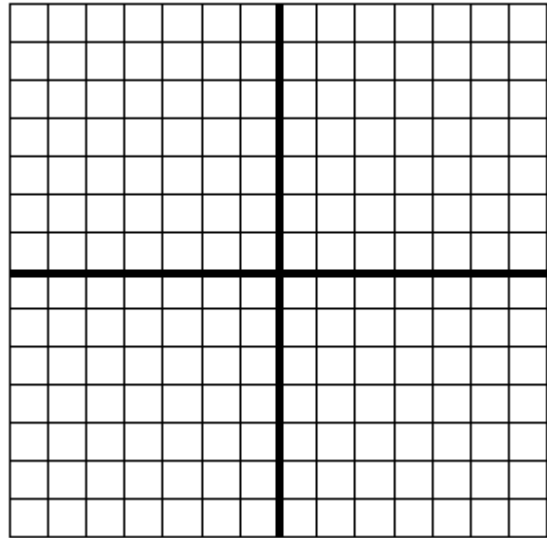
- b. $f(5)$
- d. $f(f(-1))$

Part 9: Function Types: Name the function, find its domain and range, zeroes, and graph it

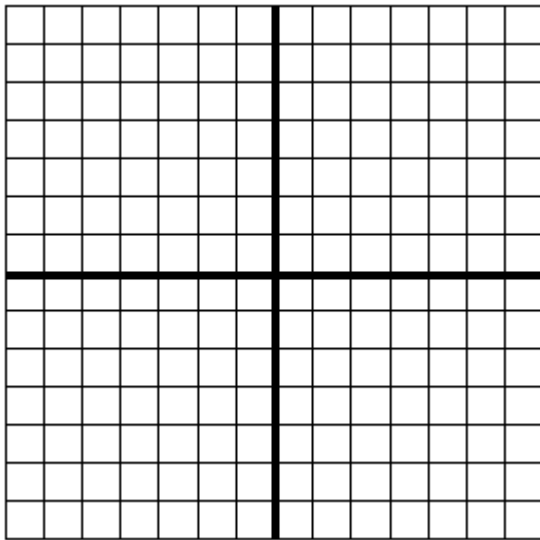
28. $4x - 3y = 6$



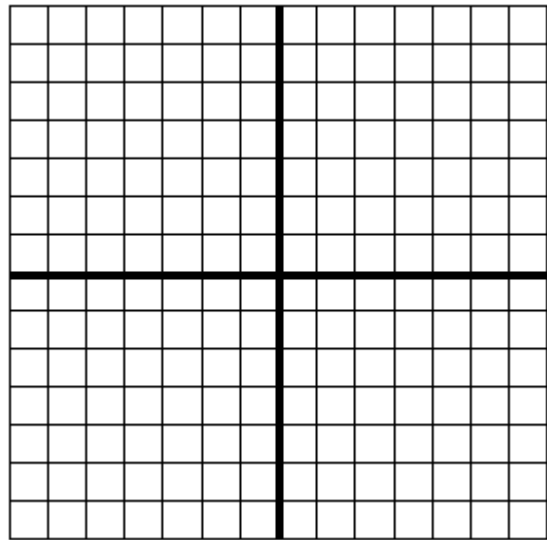
29. $f(x) = x^2 - 2x - 3$



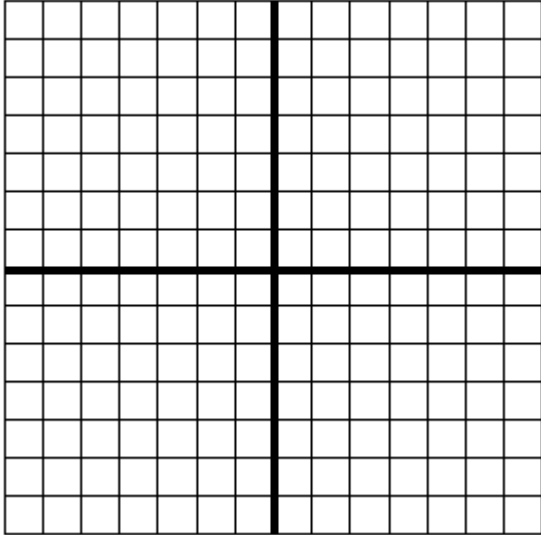
30. $y = x^3 - 8$



31. $y = 2^x$



32. $f(x) = \frac{2}{x-3}$



33. $f(x) = e^x + 3$

