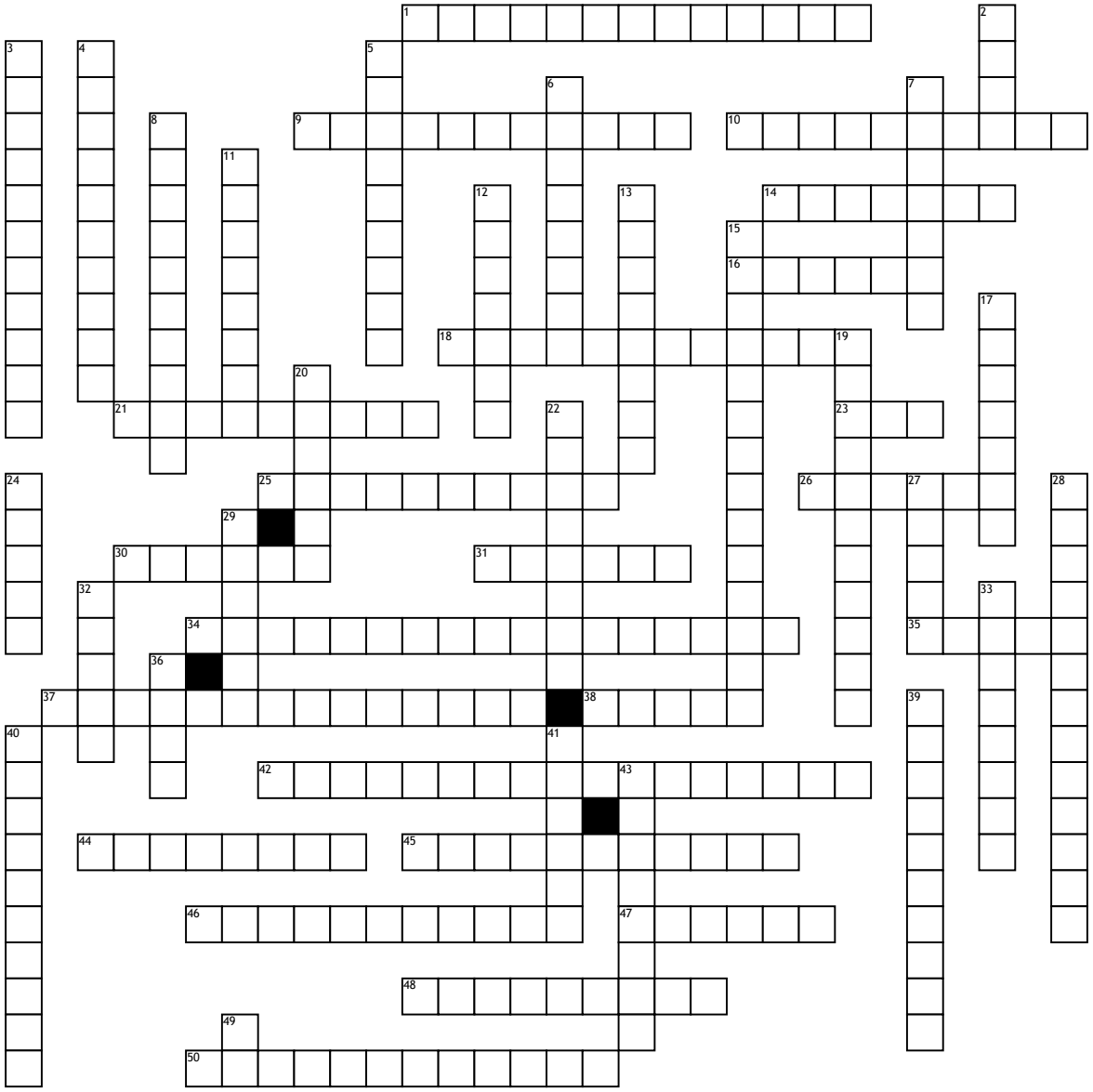
Calculus Crossword



Across

1. 0/0 or infinity/infinity is the _____ form of a limit

9. limits can be found both _____ and graphically

10. if a function is differentiable, it is also _____

14. f'(a) is the slope of the line _____ to f(x) at x=a

16. the volume of a sphere is related to its _____

18. if a function you want to optimize has 1+ variables, use _____ to rewrite the function

21. extrema occur when f'(x) is 0 or _____

23. if f(2)=3, then f^-1(3)= _____

25. v=pi/8 times the integral from a to b of [f(x)-g(x)]^2 is how one finds the volume using _____ cross sections

26. a continuous function has no _____ or jumps

30. when finding the volume by rotating around the x or y axis and there is a gap between the function and the axis, use the _____ method

31. Mean Value Theorem says that at some point on the closed interval [a,b], given f(x) is continuous and differentiable over (a,b), the slope of the tangent line at a point c, equals the slope of the _____ line from a to b

34. if f(x) is continuous on [a,b] and f(a)<0 and f(b)>0, then by the _____ theorem, there must be some value, c, on [a,b] where f(c)=0

35. for a limit to exist, the limit from the right must _____ the limit from the left

37. the integral is also referred to as the _____

38. functions are not differentiable at _____ on the graph

42. if a function is decreasing and concave down, then LRAM is an _____

44. the derivative of displacement is _____

45. V=rad3/4 times the integral from a to b of [f(x)]^2 is the formula for finding the volume of a solid with _____ triangle cross sections perpendicular to the x axis

46. _____ show the derivative of a function at given coordinates on a graph

47. another name for absolute extrema values is _____ extrema

48. by _____ rule, if the limit as x goes to a of f(x)/g(x) is of the indeterminate form, take the derivative of the numerator and the denominator

50. _____ can be used if one wanted to determine the minimum amount of material needed to build a fence of specified dimensions

Down

2. if f(a)=f(b), at some point between a and b, f'(x)= _____, given f(x) is continuous and differentiable on (a,b)

3. _____ is the world's greatest calculus teacher

4. if the position function X(t) is concave up and _____, speed of the particle is increasing at time t

5. holes in the graph are _____ discontinuity

6. _____ is the math of change

7. if g(x) is the _____ of f(x), then g'(x)=1/f'(g(x))

8. if f(x) is the rate at which water is flowing into a tank and g(x) is the rate at which water is leaking out of the tank, then if the integral from 0 to t of f(x) is greater than the integral from 0 to t of g(x), at time t the amount of water in the tank is _____

11. if the integral of f(x) from a to b is _____, the integral of f(x) from b to a will be positive

12. _____ rule states that to take the derivative of f(x)=uv, one must set f'(x)=u'v+uv'

13. _____ differentiation is used when a function contains both x and y

15. to find the _____ of a function using a calculator, graph the derivative of the function and find the roots

17. -1/rad(1-x^2) is the derivative of _____

19. the integral of 1/x(dx) = _____

20. _____ functions do not have points of inflection

22. the integral of acceleration is _____

24. if f(x)=(x^3-5)^4, one would need to use _____ rule to find the derivative

27. if a function is concave down, the tangent line lies _____ the curve

28. the integral of the absolute value of v(t) from a to b is the _____ traveled by the particle from time t=a to time t=b

29. if f''(x) does not _____ signs at a critical value, there is not a point of inflection at this critical value

32. points of inflection occur when f''(x) changes _____

33. to differentiate f(x)=u/v, one would need to use _____ rule

36. f^(4)(sinx)= _____

39. if velocity is positive and acceleration is negative, the speed of the particle is _____

40. if f(x) is _____ and concave up at x=a, f''(x)>f'(x) at x=a

41. _____ theorem is a specific case of the Mean Value Theorem

43. tanx is the _____ of (secx)^2

49. when f'(x) is increasing, f(x) is concave __