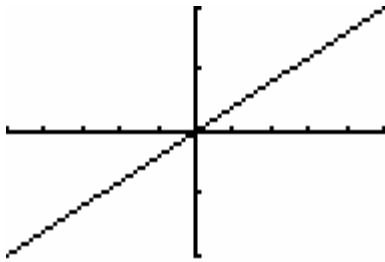


AP Calculus Assignment

Problems with an # after the number are the only ones that a calculator is required for in the solving process.

In exercise 9, the line contains the origin and the point in the upper right corner of the graph. Write an equation for the line.

9.



$[-5,5]$ by $[-2,2]$

In exercises 10-11, find the (a) slope and (b) y-intercept, and (c) graph the line.

10. $3x + 4y = 12$

11. $x/3 + y/4 = 1$

In exercises 12-13, write an equation for the line through P that is parallel to L, (b) perpendicular to L.

12. $P(-2,2), L: 2x + y = 4$

13. $P(-2,4), L: x = 5$

In exercise 14, find the value of x or y for which the line through A and B has the given slope m.

14. $A(-2,3), B(4, y), m = -2/3$

In exercises 15-21: (a) Find the domain. (b) Find the range. (c) Draw its graph. (d) Determine any symmetries that are characteristics of the graph.

15. $y = 4 - x^2$

18. $y = 1 + 1/x$

21. $y = 1 + 1/x^2$

16. $y = 2 + \sqrt{x-1}$

19. $y = \sqrt{4-x^2}$

17. $y = \sqrt[3]{x-3}$

20. $y = x^{2/3}$

In exercises 22-27, determine whether the function is even, odd or neither.

22. $y = x$

25. $y = \frac{x}{x^2-1}$

27. $y = \frac{1}{x^2-1}$

23. $y = x + 2$

24. $y = x + x^3$

26. $y = \frac{1}{x-1}$

For problems 28-30, (a) draw the graph of the function. Then find its (b) domain and (c) range.

28. $f(x) = -|3-x| + 2$

29. $f(x) = \begin{cases} 1, & x < 0 \\ \sqrt{x}, & x \geq 0 \end{cases}$

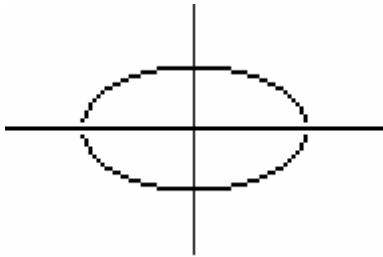
30. $f(x) = \begin{cases} 4-x^2, & x < 1 \\ (3/2)x + 3/2, & 1 \leq x \leq 3 \\ x+3, & x > 3 \end{cases}$

AP Calculus Assignment

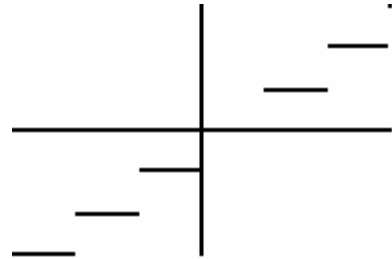
Problems with an # after the number are the only ones that a calculator is required for in the solving process.

For problems 31-34, use the vertical line test to determine whether the curve is the graph of a function.

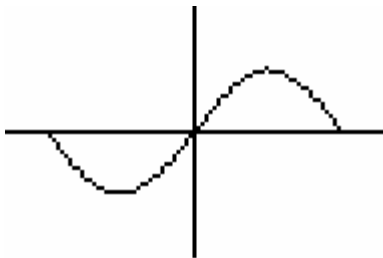
31.



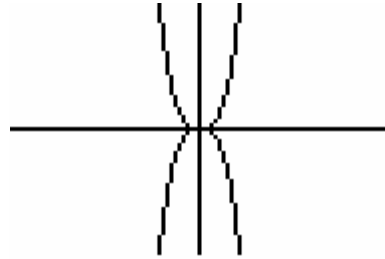
33.



32.

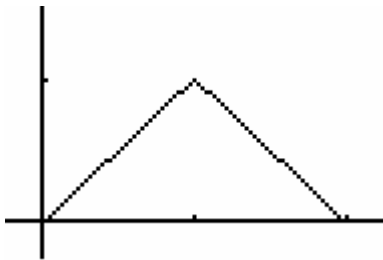


34.

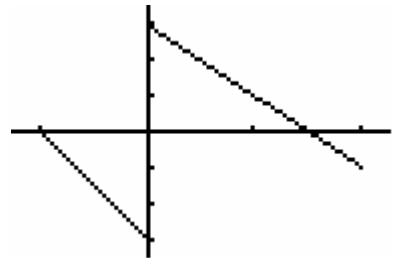


In exercises 35-37, write the piecewise formula for the **function**, scale on the graph is 1 for each hash mark on the axis.

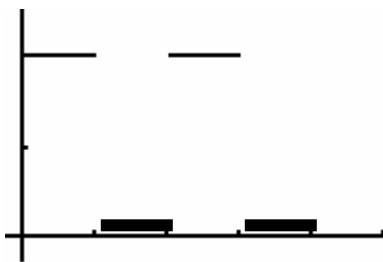
35.



37.



36.



In exercise 38, find:

(a) $f(g(x))$, (b) $g(f(x))$, (c) $f(g(0))$, (d) $g(f(0))$, (e) $g(g(-2))$, (f) $f(f(x))$

38. $f(x) = x + 5$, $g(x) = x^2 - 3$

In exercise 39, graph the function. State its domain, range, and intercepts.

39. $y = 3e^{-x} - 2$

AP Calculus Assignment

Problems with an # after the number are the only ones that a calculator is required for in the solving process.

In exercises 40-53, solve the equations.

40. $e^x = 4$ #

41. $3 - 2^{-x} = 0$ #

42. $\log_3 x = 6$

43. $\ln(x^2 + 3x) - \ln 10 = 0$ #

44. $5x^3 + 14x^2 - 7x - 12 = 0$ (rational root theorem)

45. $3x^3 - 6x^2 - 24x = 0$ (factor)

46. $125x^3 - 27 = 0$ (factor)

47. $9 + \sqrt{4x+8} = 11$

48. $2(7x-1)^{1/3} - 4 = 0$

49. $\sqrt{x-6} = 3 + \sqrt{x}$

50. $4x + x(x-3) = 0$

51. $(2x-3)^2 + 17x = 15$

52.
$$\begin{cases} x+2y=2 \\ 5x-3y=-29 \end{cases}$$

53. $\frac{3}{y-2} + \frac{2y}{4-y^2} = \frac{5}{y+2}$

In exercise 54, find f^{-1} , and verify that $f^{-1}(f(x)) = f(f^{-1}(x)) = x$.

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

In exercise 55, draw the graph and determine the domain and range of the function.

55. $y = 2\ln(3-x) - 4$

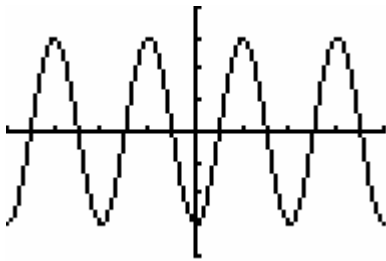
In exercises 56-57, solve for y .

56. $\ln y = 2x + 4$

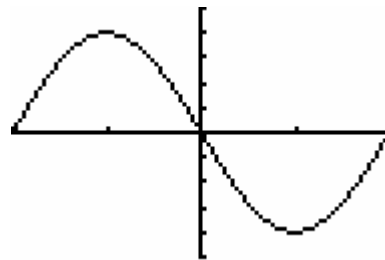
57. $\ln(y-1) - \ln 2 = x + \ln x$

In exercises 58-59, specify (a) the period, (b) the amplitude, and (c) identify the viewing window shown.

58. $y = -3\cos(2x)$



59. $y = -4\sin\left(\frac{\pi}{3}x\right)$



In exercises 60-61, determine (a) the period, (b) the domain, (c) the range, and (d) draw the graph of the function.

60. $y = 2\sin(4x + \pi) + 3$

61. $y = -3\tan(3x + \pi) + 2$

In exercises 62-64, solve the equation in the specified interval. Will need a calculator.

62. $\tan x = 2.5, 0 \leq x < 2\pi$ #

63. $\cos x = -0.7, 2\pi \leq x < 4\pi$ #

64. $\sec x = -3, -\pi \leq x < \pi$ #

Trigonometric Identities

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\cot \theta = \frac{\cos \theta}{\sin \theta}$$

$$\sec \theta = \frac{1}{\cos \theta}$$

$$\csc \theta = \frac{1}{\sin \theta}$$

$$\cot \theta = \frac{1}{\tan \theta}$$

$$\sec^{-1}(x) = \cos^{-1}\left(\frac{1}{x}\right)$$

$$\csc^{-1}(x) = \sin^{-1}\left(\frac{1}{x}\right)$$

$$\cot^{-1}(x) = \tan^{-1}\left(\frac{1}{x}\right)$$

$$\cot^{-1}(x) = \frac{\pi}{2} - \tan^{-1}(x)$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\tan^2 \theta + 1 = \sec^2 \theta$$

$$1 + \cot^2 \theta = \csc^2 \theta$$

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

$$\sin(A - B) = \sin A \cos B - \cos A \sin B$$

$$\cos(A + B) = \cos A \cos B - \sin A \sin B$$

$$\cos(A - B) = \cos A \cos B + \sin A \sin B$$

$$\cos 2\theta = \cos^2 \theta - \sin^2 \theta$$

$$\sin 2\theta = 2 \sin \theta \cos \theta$$

$$\cos 2\theta = 1 - 2 \sin^2 \theta$$

$$\cos 2\theta = 2 \cos^2 \theta - 1$$

$$\cos^2 \theta = \frac{1 + \cos 2\theta}{2}$$

$$\sin^2 \theta = \frac{1 - \cos 2\theta}{2}$$

Unit Circle

Name: key

Fill in the angles in both degrees and radians. Then write the exact ordered pair for each angle where it intersects the circle.

