

AP Calculus AB/BC Summer Homework – Answers

Answers are provided here for you to double-check yourself. Please report any errors to Mrs. Shak at Diana@shaknet.com or dshak@vcs.net. Questions can also be emailed to either of the above email addresses. Please note that summer homework is due on the first day of class. Credit will not be given if insufficient work is shown.

Pg. 2 Complex Fractions

1. $\frac{5-a}{a}$

2. $\frac{2x}{5(x+4)}$

3. $\frac{4x-12}{5x}$

4. $\frac{x^2-x-1}{x^2+x+1}$

5. $\frac{x-4}{3x^2-4x+32}$

Pg. 3 Simplifying Expressions

A. $\frac{-h}{x^2+xh}$

B. $\frac{x}{5}$

C. $\frac{2y^3}{3x^4}$

D. $3x^{3/2}$

E. $20a^5$

F. $8a^{5/2}$

G. -2

H. $\frac{-1}{x+5}$

Pg. 4 Functions

6. 5

7. 17

8. $2t+3$

9. 15

10. $8m^2+40m+49$

11. 2

12. 1

13. $\frac{\sqrt{3}}{2}$

14. 15

15. $(2x+3)^2$

16. $2x^6+3$

17. 9

18. -2

Pg. 5-6 Intercepts and Points of Intersection

- 19. $(5/2, 0)$ and $(0, -5)$
- 20. $(1,0)$ and $(-2, 0)$ and $(0,-2)$
- 21. $(0,0)$ and $(-4, 0)$ and $(4,0)$
- 22. $(0,0)$ and $(-2, 0)$ and $(2,0)$
- 23. $(3, 5)$
- 24. $(-1,5)$ and $(2,2)$
- 25. $(-2/7, -13/7)$

Pg. 6-7 Interval Notation

- 26. $(-2, 4]$ graph shows line segment from -2 to 4, with open circle on $x=-2$ and closed circle on $x = 4$
- $-1 \leq x < 7$ graph shows line segment from -1 to 7, with closed circle on -1 and open circle on 7
- $-\infty < x \leq 8$ $(-\infty, 8]$
- 27. $[1/2, \infty)$ graph shows closed circle on $1/2$ with right arrow indicating to infinity
- 28. $[-1/2, 7/2)$ graph shows line segment from -1/2 to 7/2, open circle on 7/2
- 29. $(30, \infty)$ graph shows open circle on 30 with right arrow indicating to infinity

Pg. 7 Domain and Range

- 30. Domain: $(-\infty, \infty)$ Range: $[-5, \infty)$
- 31. Domain: $[-3, \infty)$ Range: $(-\infty, 0]$
- 32. Domain: $(-\infty, \infty)$ Range: $[-3, 3]$
- 33. Domain: $(-\infty, 1)$ and $(1, \infty)$ Range: $(-\infty, 0)$ and $(0, \infty)$

Pg. 7-8 Inverses

- 34. $\frac{x-1}{2}$ 35. $\pm\sqrt{3x}$ 36 & 37. show that $f(g(x)) = g(f(x)) = x$

Pg. 9 Equation of a Line

38. $y = 3x + 5$

39. $x = 5$

40. $y = 2$

41. $(y-5) = (2/3)x$

42. $(y-8) = (5/6)(x-2)$

43. $y = 7$

44. $(y-2) = -(x-1)$ OR
 $(y-6) = -(x+3)$

45. $y = (-3/2)x + 3$

Pg. 10 Radian and Degree Measure

46. a) 150 degrees b) 144 degrees c) 150.69 degrees

47. a) $\pi/4$ b) $-.297$ c) 1.317π or 4.136

Pg. 10 Angles in Standard Position

48. sketch angles

Pg. 11 Reference Triangles

49. sketch reference triangles

Pg. 11 Unit Circle

50. a) 0 b) $-\sqrt{2}/2$ c) -1 d) -1/2 e) 1 f) -1

Pg. 12 Graphing Trig Functions

51-54. Show sketch of graphs

Pg. 13 Using the Graphing Calculator

55. $x = -0.911, 3.329$

56. $x = 0.957$

57. $x = -4.041, -0.530$

58. $x = -2.705, -0.827, 0.827, 2.705$

59. $(-0.303, 3.606)$ and $(3.303, -3.606)$

Pg. 14 Limits

60. Table of values

$$F(x) = [0.20408, 0.2004, 0.20004, 0.19996, 0.1996, 0.19608]$$

$$\text{Lim} = 0.2$$

61. Table of values

$$F(x) = [-.1662, -.1666, -.1667, -.1667, -1.667, -.1671]$$

$$\text{Lim} = -(1/6) \approx -.16666667$$

62. $\lim = 1$

63. DNE

64. 4

65. 19

66. 2

67. 2

68. -1

69. 2

70. -5

71. $\frac{1}{2}$

72. $-1/6$

73. 2

Pg. 15 One-Sided Limits

74. $1/10$

75. $-\infty$

76. 1

77. -0.3

Pg. 16 Vertical Asymptotes

78. $x = 0$

79. $x = -2, 2$

80. $x = 0, 1$

Pg. 16 Horizontal Asymptotes

81. $y = 0$

82. $y = -5/3$

83. no horizontal asymptotes

84. $\lim = 4$

85. $\lim = 0$

86. $-\infty$

Pg. 17 Limits to Infinity

87. ∞

88. $-\infty$

89. DNE