

Name: _____

AP Calculus
Summer

Find the slope.

1. $y = \frac{-3}{5}x + 7$

2. $2x + 6y = 12$

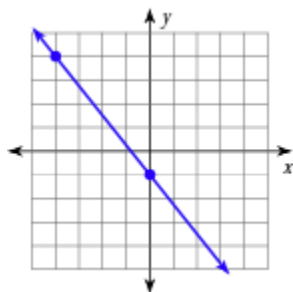
3. $x = 5$

4. $y = -3$

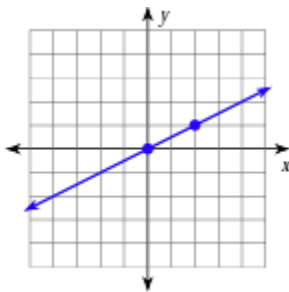
5. The line containing $(6, -8)$ and $(3, 4)$.

6. The line containing $f(5) = 11$ and $f(7) = -2$

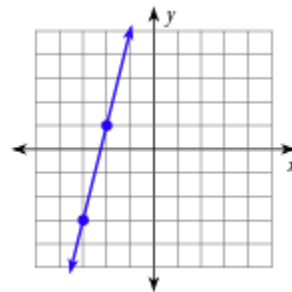
7. $m =$



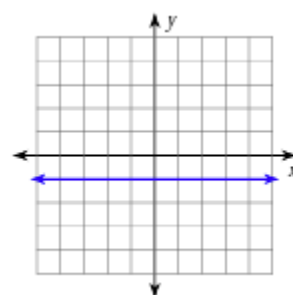
8. $m =$



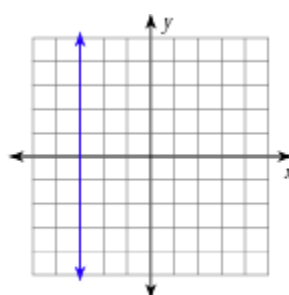
9. $m =$



10. $m =$



11. $m =$



Write the equation of the line.

12. $m = \frac{2}{3}; (9, 4)$

13. $m = \frac{-1}{4}; (20, -5)$

14. $m = 6; (-2, 11)$

15. $m = 0; (13, 25)$

16. $m = \text{undefined}; (13, 25)$

17. The line containing $(6, -8)$ and $(3, 4)$.

18. Given $f(x) = x^2 - 3x + 7$, find the following:

a. $f(-5)$

b. $f(x - 3)$

c. $f(x + h)$

19. Use the graph to answer the following.

a. $f(-6) =$

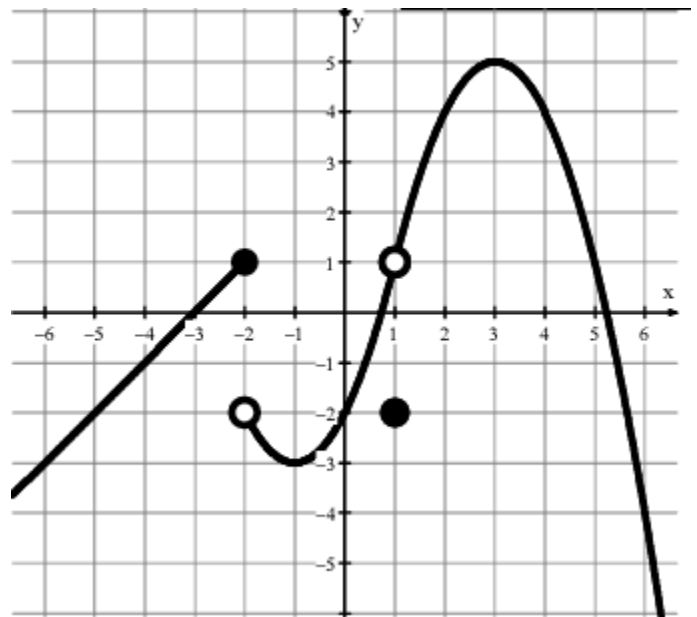
b. $f(-3) =$

c. $f(1) =$

d. $f(x) = -2$ when $x =$

e. $f(x) = 5$ when $x =$

f. $f(x) = 1$ when $x =$



Write the equation of the secant line over the given interval.

20. $f(x) = \sqrt{x + 5} + 1$; $[-5, 4]$

21. $g(x) = x^3 - 2$; $[-1, 2]$

Find the slope of the secant line on the given interval.

22. $h(x) = x^2 - 3x$; $[x, x + h]$

Evaluate the following given $f(x) = \{(-3, 4), (-2, -3), (2, 5), (3, 7), (5, -2)\}$ and $g(x) = 2x + 3$.

23. $(f + g)(2) =$

24. $(f - g)(-3) =$

25. $f(g(1)) =$

26. $g(f(3)) =$

27. $f(f(5)) =$

28. $g(g(-5)) =$

29. $f^{-1}(5) =$

30. $g^{-1}(x) =$

31. $g^{-1}(1) =$

Find the quotient using either long or synthetic division.

32.
$$\frac{5x^3 - 13x^2 - x + 2}{x^2 - 3x + 1}$$

33.
$$\frac{5x^3 + 12x^2 - 6x - 13}{x + 2}$$

34.
$$\frac{3x^3 - 10x^2 - 30}{x - 4}$$

Find the vertical and horizontal asymptotes.

35. $f(x) = \frac{x^5}{x^2 - 49}$

36. $g(x) = \frac{12x + 5}{4x - 8}$

37. $h(x) = \frac{7x + 21}{x^2 - 4x - 21}$

Find the coordinate of the HOLE.

38. $f(x) = \frac{12x-36}{x^2-9}$

39. $g(x) = \frac{11x+22}{x^2-18x-40}$

Solve the following polynomial equations.

40. $5x^3 = 15x^2$

41. $x^3 - 5x^2 - 4x + 20 = 0$

42. $x^4 = 29x^2 - 100$

43. $x^2 - 8x = 1$

Solve the following trigonometric equations on the interval $[0, 2\pi]$.

44. $\sin x = 0$

45. $\cos(2x) = \frac{-\sqrt{2}}{2}$

46. $6\csc x = 12$

47. $\sec x + 1 = 0$

48. $\tan \frac{x}{5} = \sqrt{3}$

49. $\cot x = -1$

Solve the following radical equations.

50. $5\sqrt{4x-7} + 11 = 46$

51. $\sqrt{6x+1} + 15 = 13$

52. $\sqrt[3]{2x+3} = -5$

Solve the following EXP and LOG equations.

53. $7^{x-5} = 490$

54. $\log_7(x^2 - 10) = \log_7(5 - 2x)$

55. $\log x - \log 3 = 2$

56. $8 = 8^{3x-20}$

57. $\log_3(2x - 5) + \log_3 7 = \log_3 105$

58. $\frac{1}{11} = 11^{7x+20}$

59. $6(5)^{3x-4} = 60$

60. $10 \log_2(3x - 1) + 25 = 75$

61. $2e^x + 100 = 500$

62. $\ln(3x) = 5$

63. $xe^x - 2e^x = 0$

64. $\ln(5x) = 0$

Solve the following absolute value equations.

65. $|x + 7| = 10$

66. $|2x - 12| = 0$

67. $|x - 9| + 20 = 11$

Determine if the function is even, odd, or neither.

68. $f(x) = x^2 + 5$

69. $g(x) = x^3 - 3x$

70. $h(x) = \frac{x^3}{x^2 - 8}$

71. $y = x^5 + 7$

Identify the Domain and Range.

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

73. $g(x) = \ln(x + 3)$

74. $h(x) = 5^x - 2$

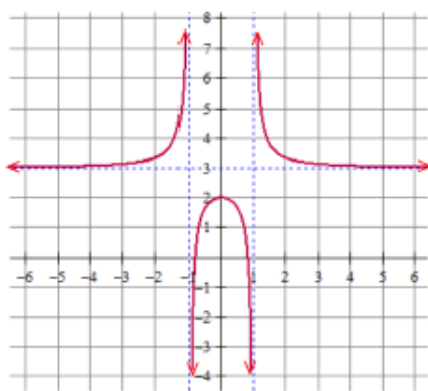
75. $y = \sqrt{9 - x^2}$

Identify Domain, Range, and Asymptotes.

76. $f(x)$

77. $g(x)$

78. $h(x)$

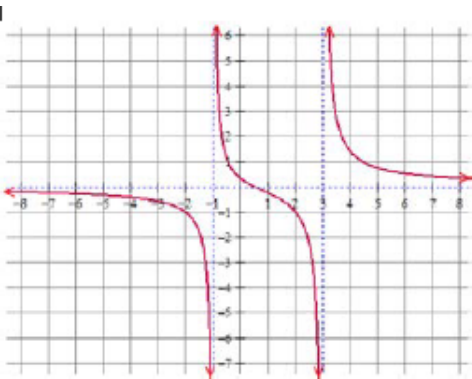


Domain:

Range:

Horizontal Asymptote(s):

Vertical Asymptotes(s):

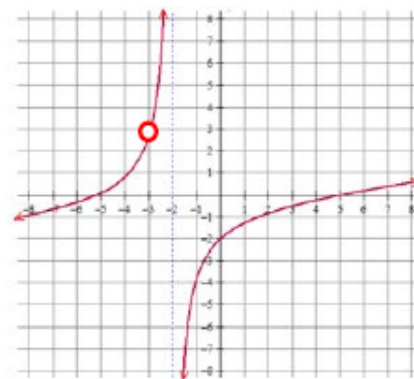


Domain:

Range:

Horizontal Asymptote(s):

Vertical Asymptotes(s):



Domain:

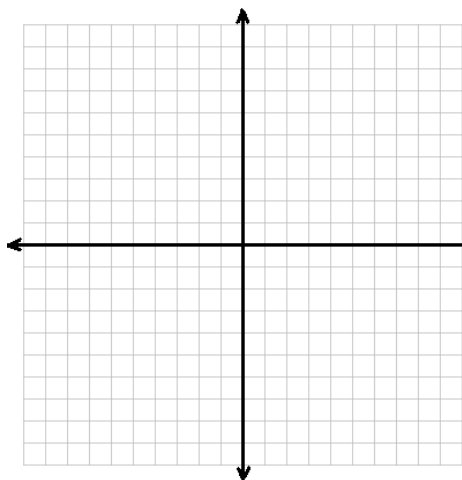
Range:

Horizontal Asymptote(s):

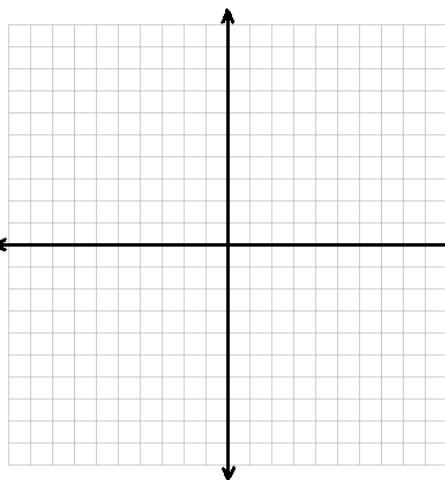
Vertical Asymptotes(s):

Identify each parent function. Graph both the parent function and the given function.

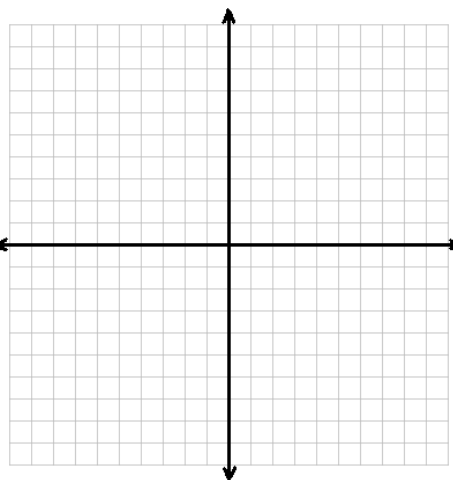
79. $f(x) = |x + 3| - 6$



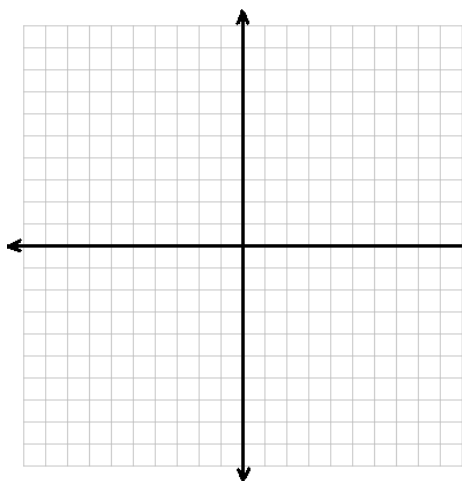
80. $g(x) = -2|x| + 7$



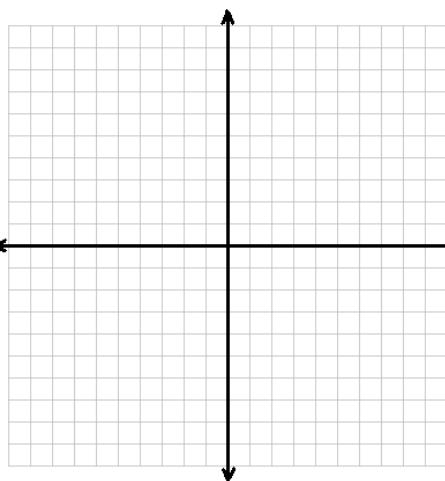
81. $h(x) = \frac{2}{3}|x - 4|$



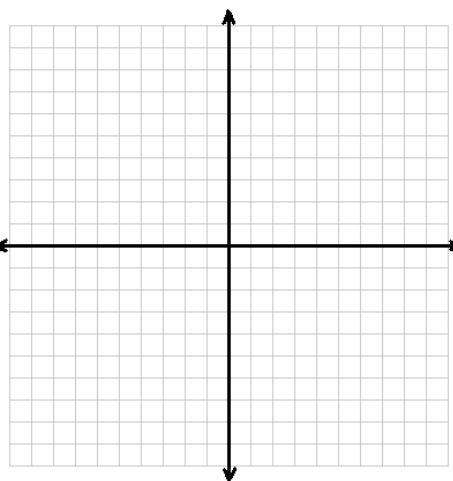
82. $f(x) = (x - 4)^2$



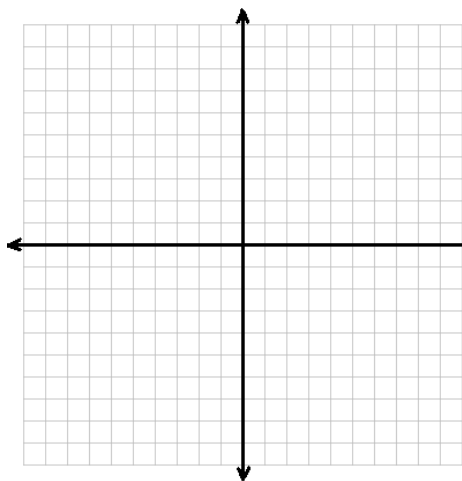
83. $g(x) = (x + 5)^2 - 3$



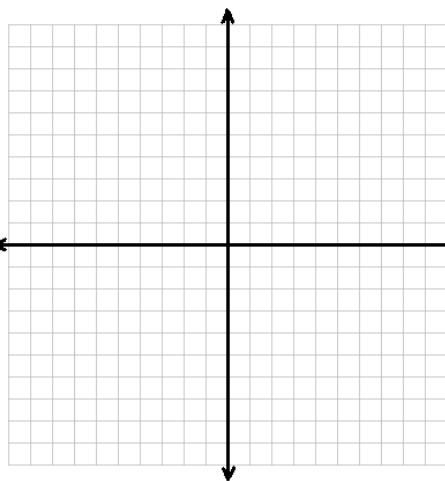
84. $h(x) = -x^2$



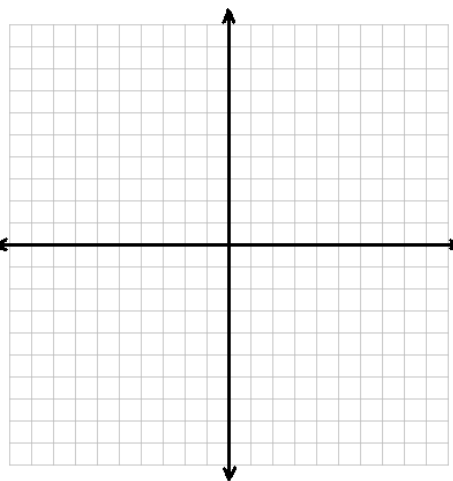
85. $f(x) = \sqrt{x + 6} + 3$



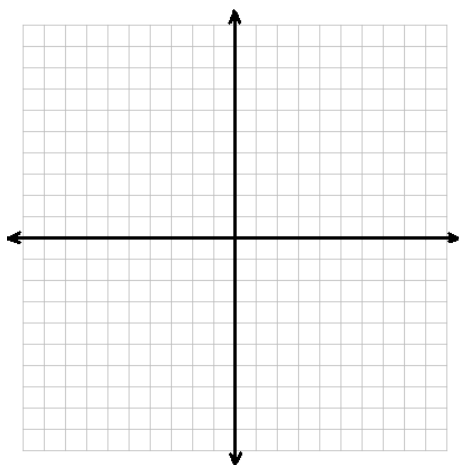
86. $g(x) = \sqrt{-x}$



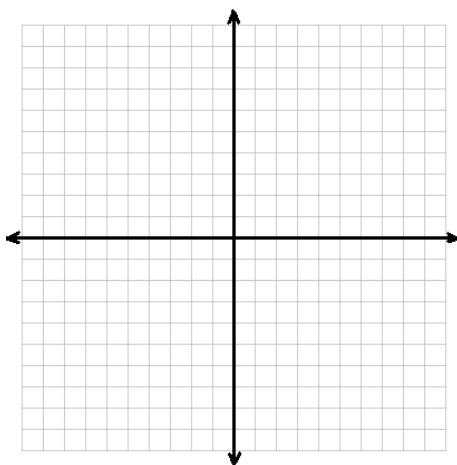
87. $h(x) = -\sqrt{x}$



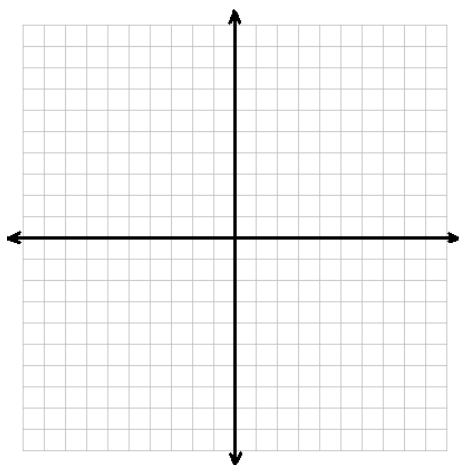
88. $f(x) = (x - 6)^3 - 1$



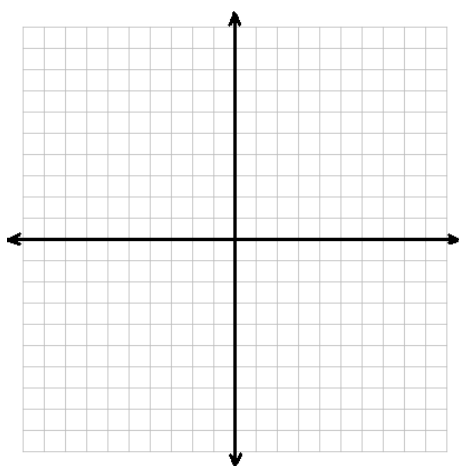
89. $g(x) = \left(\frac{1}{3}x\right)^3$



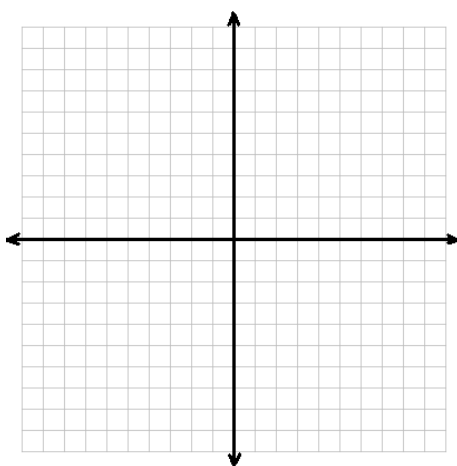
90. $h(x) = \log_5 x + 6$



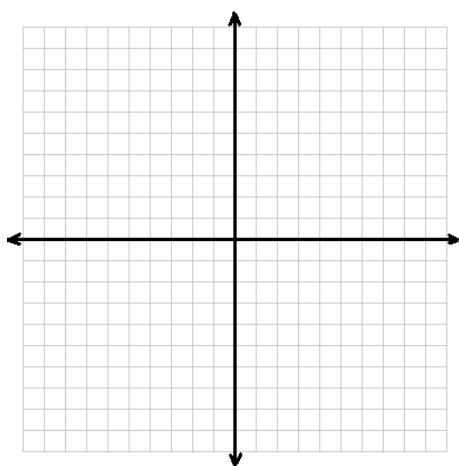
91. $f(x) = \sqrt[3]{x-1} + 6$



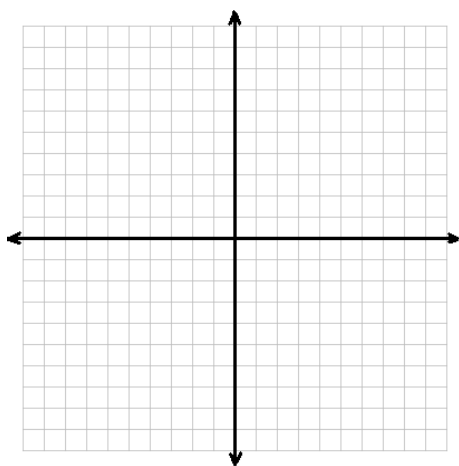
92. $g(x) = 4\sqrt[3]{x}$



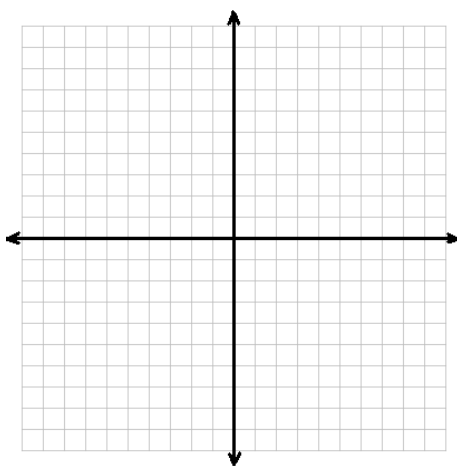
93. $h(x) = \log_4(x + 7)$



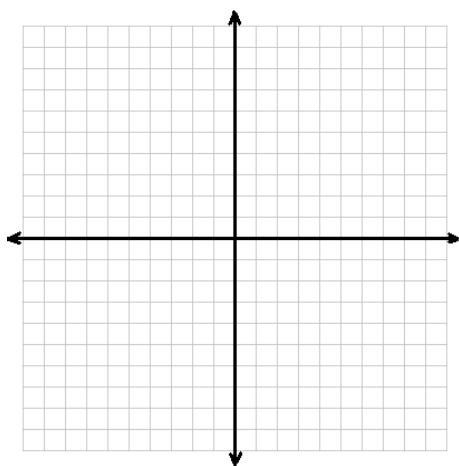
94. $f(x) = 3^x + 5$



95. $g(x) = 6^{x-4}$



96. $h(x) = \left(\frac{1}{5}\right)^x$



Rewrite the following using rational exponents. Example: $\frac{1}{\sqrt[3]{x^2}} = x^{-\frac{2}{3}}$

97. $\sqrt{36x^{36}}$

98. $\sqrt{3x^3}$

99. $\frac{5}{2^{11}\sqrt{x^7}}$

100. $\sqrt{x+1}$

101. $\frac{1}{\sqrt[3]{x-5}}$

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

Write each expression in radical form and positive exponents. Example: $x^{-\frac{2}{3}} + x^{-2} = \frac{1}{\sqrt[3]{x^2}} + \frac{1}{x^2}$

103. $(125x)^{\frac{1}{3}}$

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

105. $5x^{-3}$

106. $(5x)^{-2}$

Simplify each complex fraction.

107. $\frac{1 + \frac{5}{x}}{x^2 - 25}$

108. $\frac{\frac{2}{x} - \frac{2}{7}}{x-7}$

109. $\frac{\frac{x+4}{x} + \frac{3}{2}}{\frac{x-6}{2x}}$

110. $\frac{\frac{5}{x+2} + 1}{\frac{x+7}{x^2-4}}$

Finding the inverse of each function.

111. $f(x) = x + 5$

112. $g(x) = \frac{x}{5}$

113. $h(x) = -3x$

114. $f(x) = 3^x$

115. $g(x) = 2x - 8$

116. $h(x) = x^2$

117. $f(x) = \sqrt[3]{x}$

118. $g(x) = \sin x$

119. $h(x) = \frac{3x+4}{5x-7}$

120. $f(x) = \frac{x^2}{x^2+1}$

Factor completely.

121. $x^3 - 125$

122. $27x^3 + 8$

123. $4x^3 - 8x^2 - 9x + 18$

124. $5(x+2)^3 - 3(x+2)^2$