KEY

College Prep Algebra

Midterm Review

Section P.2 Integer & Rational Exponents

Write the exponential expression in simplest form.

1. $(x^3y^2)(xy^5)$ — x^4y^7

2. $(-2ab^4)(3a^2b^5)$ — $-6a^3b^9$

3. $(-4x^{-3}y)(7x^5y^{-2})$ — $-28x^2y^{-1}$, $\frac{-28x^2}{y}$

4. $(-6x^4y)(7x^{-3}y^{-5})$ — $-42xy^{-4}$, $\frac{-42x}{y^4}$

5. $\frac{6a^4}{8a^8} = \frac{3}{4a^4}$

6. $\frac{5x^4y^{-3}}{10x^7} = \frac{1}{2x^3y^3}$

7. $\frac{36a^{-2}b^3}{3ab^4} = \frac{12}{a^3b}$

8. $(-2m^3n^2)(-3mn^2)^2$ — $(-2m^3n^2)(9m^2n^4)$, $-18m^5n^6$

9. $(3a^3b^2)^3(-4a^4b^2)$ — $(27a^9b^6)(-4a^4b^2)$, $-108a^{13}b^8$

10. $(x^{-2}y)^2(xy)^{-2}$ — $(x^{-4}y^2)(x^{-2}y^{-2})$, x^{-6}, $\frac{1}{x^6}$

11. $\left(\frac{3x^2y^3}{6x^4y^4}\right)^2$ — $\frac{9x^4y^6}{36x^8y^8}$, $\frac{1}{4x^4y^2}$

12. $\left(\frac{x^{-3}y^{-4}}{x^{-2}y}\right)^{-2}$ — $\frac{x^6y^8}{x^4y^{-2}}$, x^2y^{10}

Section P.6 Complex Numbers

Write the complex number in standard form.

13. $\sqrt{-81}$ — $9i$

14. $\sqrt{-98}$ — $7i\sqrt{2}$

15. $\sqrt{16}+\sqrt{-81}$ — $4+9i$

16. $6-\sqrt{-1}$ — $6-i$

17. $8-\sqrt{-18}$ — $8-3i\sqrt{2}$

Simplify and write the complex number in standard form.

18. $(5+2i)+(6-7i)$ — $11-5i$

19. $(-2-4i)-(5-8i)$ — $-7+4i$

20. $(5i)(8i)$ — $40i^2$, -40

21. $8i-(2-8i)$ — $8i-2+8i$, $-2+16i$

22. $(4+2i)(3-4i)$

$12-16i+6i-8i^2$

$20-10i$

23. $(4-5i)(4+5i)$

$16+20i-20i-25i^2$

41

24. $\frac{6+3i}{i}\cdot\frac{i}{i}=\frac{6i+3i^2}{i^2}$

$\frac{-3+6i}{-1}$

$3-6i$

25. $\frac{3+2i}{3-2i}\cdot\frac{(3+2i)}{(3+2i)}$

$\frac{9+6i+6i+4i^2}{9-4i^2}$

$\frac{9+12i-4}{13}$

$\frac{5+12i}{13}$

Evaluate.

26. $i^{15}=-i$

27. $i^{27}=-i$

28. $i^{18}=-1$

29. $i^{40}=1$

Section 1.1 Linear and Absolute Value Equations

Solve each equation.

30. $2x+10=40$

$2x=30$

$x=15$

31. $5x+2=2x-10$

$3x=-12$

$x=-4$

32. $2(x-3)-5=4(x-5)$

$2x-6-5=4x-20$

$2x-11=4x-20$

$-2x=-9$

$x=\frac{9}{2}$

33. $\left(\frac{2}{3}x-5=\frac{1}{2}x-3\right)6$

$4x-30=3x-18$

$x=12$

34. $6-2(4x+1)=3x-2(2x+5)$

$6-8x-2=3x-4x-10$

$-8x+4=-x-10$

$-7x=-14$

$x=2$

35. $\left(\frac{3}{4}x+\frac{1}{2}=\frac{2}{3}\right)12$

$9x+6=8$

$9x=2$

$x=\frac{2}{9}$

36. $\frac{40-3x}{5}=\frac{6x+7}{8}$

$320-24x=30x+35$

$\frac{-54x}{-54}=\frac{-285}{-54}$

$x=\frac{95}{18}$

Solve each absolute value equation.

37. $|2x+6|=10$

$2x+6=-10$ $\quad 2x+6=10$

$2x=-16$ $\quad 2x=4$

$x=-8$ $\quad x=2$

$x=-8,2$

38. $|2x+5|=-8$

No Sol.

39. $2|x+3|+4=34$

$2|x+3|=30$

$|x+3|=15$

$x+3=-15$ $\quad x+3=15$

$x=-18,12$

40. $\left|\frac{x+3}{4}\right|=6$

$\frac{x+3}{4}=-6$ $\quad \frac{x+3}{4}=6$

$x+3=-24$ $\quad x+3=24$

$x=-27,21$

Section 1.3 Quadratic Equations

Solve the quadratic equation using any method.

1. $x^2+4x-21=0$

$7\ -3$

$x=-7,3$

42. $2x^2-11x=-12$

$2x^2-11x+12=0$

24

$-8\ -3$

$\frac{-8}{2}\ \frac{-3}{2}$

-4

$x=\frac{3}{2},4$

43. $x^2+6x+13=0$

$\frac{-6\pm\sqrt{(6)^2-4(1)(13)}}{2(1)}$

$\frac{-6\pm 4i}{2}$

$x=-3\pm 2i$

44. $(x-4)^2+25=0$

$\sqrt{(x-4)^2}=\sqrt{-25}$

$x-4=5i$

$x=4\pm 5i$

Section 1.4 Other Types of Equations

Solve the rational equation. Be sure to check your solution(s).

45. $\left(\frac{5}{x+4}-2=\frac{7x+18}{x+4}\right)(x+4)$

$5-2(x+4)=7x+18$

$5-2x-8=7x+18$

$-2x-3=7x+18$

$-9x=21$

$\frac{-9}{-9}\ \frac{21}{-9}$

$x=\frac{-7}{3}$

46. $\left(2+\frac{9}{x-3}=\frac{3x}{x-3}\right)(x-3)$

$2(x-3)+9=3x$

$2x-6+9=3x$

$2x+3=3x$

$3=x$

No Sol.

47. $\left(\frac{x}{x+1}-\frac{x+2}{x-1}=\frac{x-12}{x+1}\right)^{(x+1)(x-1)}$

$x(x-1)-((x+2)(x+1))=(x-12)(x-1)$

$x^2-x-x^2-3x-2=x^2-13x+12$

$x-2=x^2-13x+12$

$0=x^2-9x+14$

$-7\ -2$

$x=7,2$

48. $\frac{4}{y+2}=\frac{7}{y-4}$

$4y-16=7y+14$

$-3y=30$

$y=-10$

Solve the radical equation. Be sure to check your solution(s).

49. $\left(\sqrt{10-x}\right)^2=(4)^2$

$10-x=16$

$-x=6$

$x=-6$

50. $\left(\sqrt{9x-20}\right)^2=(x)^2$

$9x-20=x^2$

$0=x^2-9x+20$

$-5\ -4$

$x=5,4$

51. $\sqrt{-7x+2}+x=2$

$\left(\sqrt{-7x+2}\right)^2=(-x+2)^2$

$-7x+2=x^2-4x+4$

$0=x^2+3x+2$

$2\ 1$

$x=-2,-1$

52. $\sqrt{-9x-9}+x=1$

$(\sqrt{-9x-9})^2=(-x+1)^2$

$-9x-9=x^2-2x+1$

$0=x^2+7x+10$

$2 \quad 5$

$x=-2,-5$

53. $\sqrt{3x-5}-\sqrt{x+2}=1$

$(\sqrt{3x-5})^2=(\sqrt{x+2}+1)^2$

$3x-5=x+2+2\sqrt{x+2}+1$

$3x-5=x+3+2\sqrt{x+2}$

$(2x-8)^2=(2\sqrt{x+2})^2$

$4x^2-32x+64=4(x+2)$

$4x^2-32x+64=4x+8$

$4x^2-36x+56=0$

$4(x^2-9x+14)=0$

$-7 \quad -2$

$x=7,2$ $\quad x=7$

54. $\sqrt{2x-9}+\sqrt{2x+6}=3$

$(\sqrt{2x-9})^2=(3-\sqrt{2x+6})^2$

$2x-9=9-6\sqrt{2x+6}+2x+6$

$2x-9=2x+15-6\sqrt{2x+6}$

$(-24)^2=(-6\sqrt{2x+6})^2$

$576=36(2x+6)$

$576=72x+216$

$\frac{360}{72}=\frac{72x}{72}$

$x=5$

No Sol.

Solve each equation containing a rational exponent on the variable.

55. $(x^{3/2})^{2/3}=(27)^{2/3}$

$x=9$

56. $(x^{4/3})^{3/4}=(81)^{3/4}$

$x=\pm 27$

57. $3x^{2/3}-16=59$

$+16 \quad +16$

$3x^{2/3}=75$

$(x^{2/3})^{3/2}=(25)^{3/2}$

$x=\pm 125$

58. $4x^{3/4}-31=77$

$+31 \quad +31$

$4x^{3/4}=108$

$(x^{3/4})^{4/3}=(27)^{4/3}$

$x=81$

Solve the equation that is in quadratic form.

59. $x^4-9x^2+14=0$

$u=x^2$

$u^2-9u+14=0$

$-7 \quad -2$

$(x^2-7)(x^2-2)=0$

$x^2=7 \quad x^2=2$

$x=\pm\sqrt{7},\pm\sqrt{2}$

60. $x^4-10x^2+9=0$

$u=x^2$

$(u-9)(u-1)=0$

$(x^2-9)(x^2-1)=0$

$x=\pm 3,\pm 1$

61. $x^{1/2}-3x^{1/4}+2=0$

$u=x^{1/4}$

$u^2-3u+2=0$

$(x^{1/4}-2)(x^{1/4}-1)=0$

$x^{1/4}=2 \quad x^{1/4}=1$

$x=16,1$

62. $x^4+8x^2-9=0$

$u=x^2$

$u^2+8u-9=0$

$(x^2+9)(x^2-1)=0$

$x^2=-9 \quad x^2=1$

$x=\pm 3i,\pm 1$

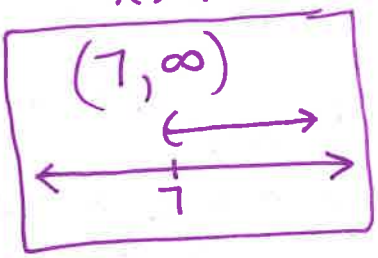
Section 1.5 Inequalities

Solve each inequality. Write the solution set in interval notation and graph the solution set.

63. $3x-5>16$

$3x>21$

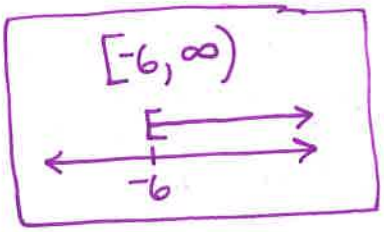
$x>7$



64. $x+4\le 3x+16$

$-2x\le 12$

$x\ge -6$

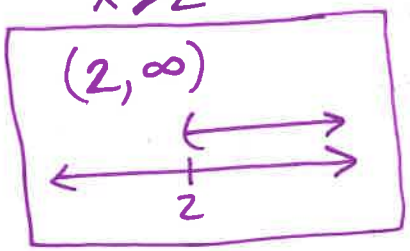


65. $-4(3x-5)<2(x-4)$

$-12x+20<2x-8$

$-14x<-28$

$x>2$

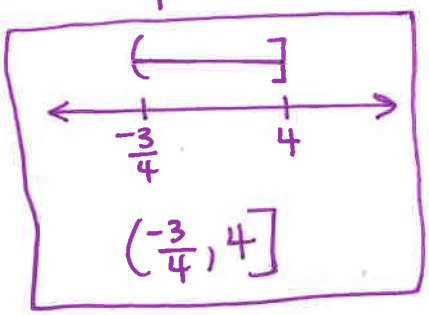


Solve the compound inequality. Write the solution set in interval notation and graph the solution set.

66. $4x+1>-2$ and $4x+1\le 17$

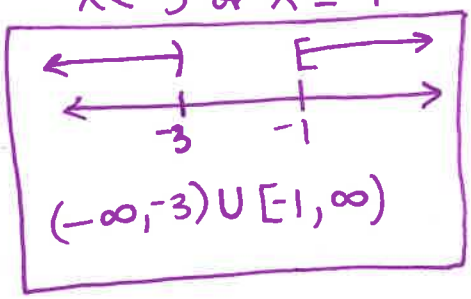
$4x>-3$ $\quad 4x\le 16$

$x>\frac{-3}{4}$ and $x\le 4$



67. $x+2<-1$ or $x+3\ge 2$

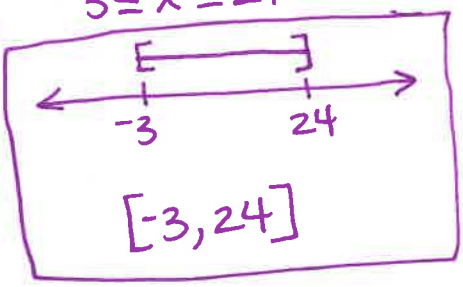
$x<-3$ or $x\ge -1$



68. $0\le 2x+6\le 54$

$-6\le 2x\le 48$

$-3\le x\le 24$



Solve each absolute value inequality. Use interval notation to express the solution set.

69. $|3x-10|<14$

$-14<3x-10<14$

$-4<3x<24$

$\frac{-4}{3}<x<8$

$\left(\frac{-4}{3},8\right)$

70. $|2x-5|\ge 1$

$2x-5\le -1$ or $2x-5\ge 1$

$2x\le 4$ $\quad 2x\ge 6$

$x\le 2$ or $x\ge 3$

$(-\infty,2]\cup[3,\infty)$

71. $|x-7|\ge 0$

$(-\infty,\infty)$

72. $|2x-7|<7$

$-7<2x-7<7$

$0<2x<14$

$0<x<7$

$(0,7)$

Use the critical value method to solve each polynomial inequality. Use interval notation to write each solution set.

73. $x^2+7x>0$

$x(x+7)>0$

c.v. $0,-7$

	$(-\infty,-7)$	-7	$(-7,0)$	0	$(0,\infty)$
x	$-$		$-$		$+$
$x+7$	$-$		$+$		$+$
	min				min
	$+$		$-$		$+$

$(-\infty,-7)\cup(0,\infty)$

74. $x^2+5x+6<0$

$(x+2)(x+3)<0$

c.v. $-2,-3$

	$(-\infty,-3)$	-3	$(-3,-2)$	-2	$(-2,\infty)$
$x+2$	$-$		$-$		$+$
$x+3$	$-$		$+$		$+$
			min		
	$+$		$-$		$+$

$(-3,-2)$

75. $x^3-x^2-16x+16\le 0$

$x^2(x-1)-16(x-1)\le 0$

$(x-4)(x+4)(x-1)\le 0$

c.v. $-4,1,4$

	$(-\infty,-4)$	-4	$(-4,1)$	1	$(1,4)$	4	$(4,\infty)$
$x-4$	$-$		$-$		$-$		$+$
$x+4$	$-$		$+$		$+$		$+$
$x-1$	$-$		$-$		$+$		$+$
			max		min		
	$-$		$+$		$-$		$+$

$(-\infty,-4]\cup[1,4]$

76. $x^2-3x\ge 28$

$x^2-3x-28\ge 0$

$(x-7)(x+4)\ge 0$

c.v. $-4,7$

	$(-\infty,-4)$	-4	$(-4,7)$	7	$(7,\infty)$
$x-7$	$-$		$-$		$+$
$x+4$	$-$		$+$		$+$
	min				min
	$+$		$-$		$+$

$(-\infty,-4]\cup[7,\infty)$

Use the critical value method to solve each polynomial inequality. Use interval notation to write each solution set.

77. $\dfrac{x+4}{x-1}<0$

c.v. $-4,1$

	$(-\infty,-4)$	-4	$(-4,1)$	1	$(1,\infty)$
$x+4$	$-$		$+$		$+$
$x-1$	$-$		$-$		$+$
			max		
	$+$		$-$		$+$

$(-4,1)$

78. $\dfrac{x-4}{x+6}\le 1$

$\dfrac{x-4}{x+6}-1\le 0$

$\dfrac{x-4-(x+6)}{x+6}\le 0$

$\dfrac{-10}{x+6}\le 0$

c.v. -6

	$(-\infty,-6)$	-6	$(-6,\infty)$
-10	$-$		$-$
$x+6$	$-$		$+$
			min
	$+$		$-$

$(-6,\infty)$

79. $\dfrac{x^2-6x+9}{x-5}\le 0$

$\dfrac{(x-3)^2}{x-5}\le 0$

c.v. $3,5$

	$(-\infty,3)$	3	$(3,5)$	5	$(5,\infty)$
$x-3$	$-$		$+$		$+$
$x-3$	$-$		$+$		$+$
$x-5$	$-$		$-$		$+$
			max		min
	$-$		$+$		$-$

$(-\infty,5)$

80. $\dfrac{3x+1}{x-2}\ge 4$

$\dfrac{3x+1}{x-2}-4\ge 0$

$\dfrac{3x+1-4(x-2)}{x-2}\ge 0$

$\dfrac{3x+1-4x+8}{x-2}\ge 0$

$\dfrac{-x+9}{x-2}\ge 0$

c.v. $9,2$

	$(-\infty,2)$	2	$(2,9)$	9	$(9,\infty)$
$-x+9$	$+$		$+$		$-$
$x-2$	$-$		$+$		$+$
			min		
	$-$		$+$		$-$

$(2,9]$

Section 2.2 Introduction to Functions

Determine whether the equation defines y as a function of x.

81. $x^2 - 2y = 2$

$\frac{-2y}{-2} = \frac{-x^2+2}{-2}$

$y = \frac{-x^2+2}{-2}$

function

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

function

83. $y^2 = 2x + 3$

Not a function

84. $y = \frac{2}{x+6}$

function

Evaluate each function.

85. Given $f(x) = 2x^2 + 3$, find $f(4)$, $f(-6)$, and $f(0)$.

$f(4) = 35$

$f(-6) = 75$

$f(0) = 3$

86. Given $f(x) = \frac{x}{x+4}$, find $f(-2)$, $f(3)$, and $f(10)$.

$f(-2) = -1$

$f(3) = \frac{3}{7}$

$f(10) = \frac{5}{7}$

Determine the domain of each function.

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

$6+x \geq 0$

$x \geq -6$

$\{x \mid x \geq -6\}$

88. $f(x) = x^2 + 3x + 15$

$(-\infty, \infty)$

89. $f(x) = \frac{6}{x-10}$

$\{x \mid x \neq 10\}$

90. $f(x) = \frac{1}{\sqrt{7-x}}$

$7-x > 0$

$-x > -7$

$x < 7$

$\{x \mid x < 7\}$

Find the value(s) of a in the domain of f for which $f(a)$ equals the given number.

91. $f(x) = x^2 + 2x - 2, f(a) = 46$

$46 = a^2 + 2a - 2$

$0 = a^2 + 2a - 48$

$8 \quad -6$

$a = -8, 6$

92. $f(x) = 5x + 8, f(a) = 33$

$33 = 5a + 8$

$25 = 5a$

$a = 5$

Find the zero(s) of the function.

93. $f(x)=6+2x$

$0=6+2x$

$-6=2x$

$x=-3$

94. $f(x)=8-6x$

$0=8-6x$

$\frac{-8}{-6}=\frac{-6x}{-6}$

$\frac{4}{3}=x$

95. $f(x)=x^2+4x-21$

$-7 \cdot 3$

$x=-7,3$

96. $f(x)=2x^2+3x-5$

-10

$5 \cdot -2$

$\frac{2}{2}$

-1

$x=\frac{-5}{2},1$

Section 2.3 Linear Functions

Write the equation of the line in slope-intercept form for the given situation.

97. Through $(-3,2)$, slope 4

$y-2=4(x+3)$

$y-2=4x+12$

$y=4x+14$

98. Through $(0,4)$, slope 0

$y=4$

99. Through $(-5,6)$ and $(-3,-4)$

$m=\frac{-4-6}{-3+5}=\frac{-10}{2}=-5$

$y+4=-5(x+3)$

$y+4=-5x-15$

$y=-5x-19$

Write the equation of a line in slope-intercept form for the given situation.

100. The graph is parallel to the graph of $y=-\frac{3}{4}x+3$ and passes through the point whose coordinates are $(-4,2)$.

$y-2=\frac{-3}{4}(x+4)$

$y-2=\frac{-3}{4}x-3$

$y=\frac{-3}{4}x-1$

101. The graph is perpendicular to the graph of $3x+4y=12$ and passes through the point whose coordinates are $(-6,0)$.

$\frac{4y}{4}=\frac{-3x}{4}+\frac{12}{4}$

$y=\frac{-3}{4}x+3$

$m_{\perp}=\frac{4}{3}$

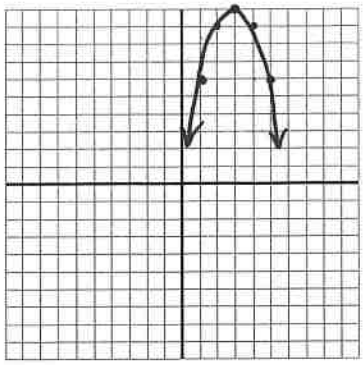
$y=\frac{4}{3}(x+6)$

$y=\frac{4}{3}x+8$

2.4 Quadratic Functions

Write the quadratic function in vertex form. Graph the quadratic and then state the axis of symmetry of the graph.

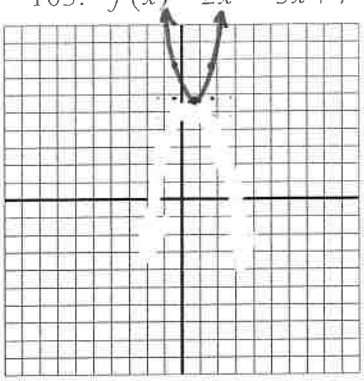
102. $f(x) = -x^2 + 6x + 1$



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

A.S. $x = 3$

103. $f(x) = 2x^2 - 3x + 7$

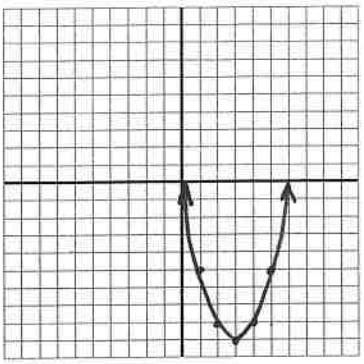


Vertex $(\frac{3}{4}, \frac{47}{8})$

$y = 2(x - \frac{3}{4})^2 + \frac{47}{8}$

A.S. $x = \frac{3}{4}$

104. $f(x) = x^2 - 6x$

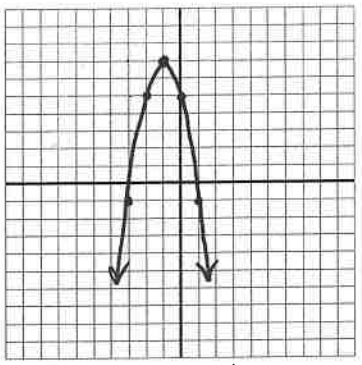


Vertex $(3, -9)$

$y = (x-3)^2 - 9$

A.S. $x = 3$

105. $f(x) = -2x^2 - 4x + 5$



Vertex $(-1, 7)$

$y = -2(x+1)^2 + 7$

A.S. $x = -1$

Find the maximum of the quadratic function.

106. $f(x) = -x^2 + 6x + 2$

11, max

107. $h(x) = x^2 - 2x - 1$

-2, min

108. $f(x) = -\frac{1}{2}x^2 + 6x + 17$

35, max

109. **Soccer Ball Kick:** The height $h(t)$, in meters, above the ground of a certain soccer ball kicked t seconds after the ball is kicked can be approximated by $h(t) = -4.9t^2 + 12.8t$.

a. What is the maximum height the soccer ball will reach? 8.36 m
b. What is the time will the soccer ball reach its maximum height? 1.3 s
c. Determine the time for which the ball is in the air. Round to the nearest tenth of a second. 2.6 s

110. **Height of an Arch:** The height of an arch is given by: $h(x) = -\frac{5}{16}x^2 + 35$, where $|x|$ is the horizontal distance in feet from the center of the arch to the ground.

a. What is the maximum height of the arch? 35 ft
b. What is the height of the arch 10 feet to the right of center? 3.75 ft
c. How far from the center is the arch 8 feet tall? 9.3 ft

Section 2.6 Functions and Graphs

Determine whether the given function is an even function, odd function, or neither.

111. $f(x)=x^7+x^3$

$-f(x)=-x^7-x^3$

$f(-x)=(-x)^7+(-x)^3$

$f(-x)=-x^7-x^3$

ODD

112. $f(x)=x^2-7$

$-f(x)=-x^2+7$

$f(-x)=(-x)^2-7$

$f(-x)=x^2-7$

EVEN

113. $f(x)=x^2+4x-13$

$-f(x)=-x^2-4x+13$

$f(-x)=(-x)^2+4(-x)-13$

$f(-x)=x^2-4x-13$

Neither

114. $f(x)=x^4+x^2+5$

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

$f(-x)=(-x)^4+(-x)^2+5$

$f(-x)=x^4+x^2+5$

EVEN

115. Let f be a function such that $f(-3)=-1$, $f(1)=-3$, $f(4)=2$. Give the coordinates of three points on the graph of:

$(-3,-1)$ $(1,-3)$ $(4,2)$

a. $y=f(x+4)$ b. $y=f(x)-6$ c. $y=f(x-1)+4$ d. $y=-f(x)$ e. $y=f(-x)+2$

$(x,y)\to(x-4,y)$

$(-7,-1)$
$(-3,-3)$
$(0,2)$

$(x,y)\to(x,y-6)$

$(-3,-7)$
$(1,-9)$
$(4,-4)$

$(x,y)\to(x+1,y+4)$

$(-2,3)$
$(2,1)$
$(5,6)$

$(-3,1)$
$(1,3)$
$(4,-2)$

$(3,1)$
$(-1,-1)$
$(-4,4)$

116. If $f(x)=\sqrt{x+5}$ and $g(x)=2x+8$, find the domain for each situation.

D_f $\{x\mid x\geq -5\}$ D_g $(-\infty,\infty)$

a. $(f+g)(x)$ b. $(f-g)(x)$ c. $(fg)(x)$ d. $\left(\frac{f}{g}\right)(x)=\frac{\sqrt{x+5}}{2x+8}$

D_{f+g} $\{x\mid x\geq -5\}$ D_{f-g} $\{x\mid x\geq -5\}$ D_{fg} $\{x\mid x\geq -5\}$

D_f $\{x\mid x\geq -5\}$

D_g $\{x\mid x\neq -4\}$

$D_{\frac{f}{g}}$ $\{x\mid x\geq -5$ and $x\neq -4\}$

117. If $f(x)=x+7$ and $g(x)=\sqrt{6-x}$, find the domain for each situation.

$D_{f(x)}: (-\infty,\infty)$ $D_{g(x)}: \{x \mid x \le 6\}$

a. $(f+g)(x)$ $D_{f+g}: \{x \mid x \le 6\}$

b. $(f-g)(x)$ $D_{f-g}: \{x \mid x \le 6\}$

c. $(fg)(x)$ $D_{fg(x)}: \{x \mid x \le 6\}$

d. $\left(\frac{f}{g}\right)(x)$ $D_{\frac{f}{g}(x)}: \{x \mid x < 6\}$

Evaluate the indicate function, where $f(x)=x^2+2$ and $g(x)=2x+12$.

118. $(f+g)(5)$

$f(5)+g(5)$

$(5)^2+2+2(5)+12$

$27+22$

$f(5)+g(5)=\boxed{49}$

119. $(f+g)\left(\frac{1}{2}\right)$

$f\left(\frac{1}{2}\right)+g\left(\frac{1}{2}\right)$

$\left(\frac{1}{2}\right)^2+2+2\left(\frac{1}{2}\right)+12$

$\frac{1}{4}+2+13$

$(f+g)\left(\frac{1}{2}\right)=\boxed{\frac{61}{4}}$

120. $(f-g)(-3)$

$f(-3)-g(-3)$

$(-3)^2+2-(2(-3)+12)$

$11-6$

$(f-g)(-3)=\boxed{5}$

121. $(f-g)(-1)$

$f(-1)-g(-1)$

$(-1)^2+2-(2(-1)+12)$

$3-(10)$

$(f-g)(-1)=\boxed{-7}$

Evaluate the indicate function, where $f(x)=2x^2-5x$ and $g(x)=x+13$.

122. $(fg)(7)$

$f(7)\cdot g(7)$

$(2(7)^2-5(7))(7+13)$

$(63)(20)$

$(fg)(7)=\boxed{1260}$

123. $\left(\frac{f}{g}\right)(-4)$

$\frac{f(-4)}{g(-4)}=\frac{2(-4)^2-5(-4)}{-4+13}$

$\left(\frac{f}{g}\right)(-4)=\boxed{\frac{52}{9}}$

124. $\left(\frac{f}{g}\right)(11)$

$\frac{f(11)}{g(11)}=\frac{2(11)^2-5(11)}{11+13}$

$\left(\frac{f}{g}\right)(11)=\boxed{\frac{187}{24}}$

125. $(fg)(-3)$

$f(-3)\cdot g(-3)$

$(2(-3)^2-5(-3))(-3+13)$

$(33)(10)$

$(fg)(-3)=\boxed{330}$

126. If $f(x)=3x+5$ and $g(x)=x^2$, find $(f\circ g)(x)$ and $(g\circ f)(x)$.

$f(g(x)) = 3x+5$

$f(g(x)) = 3(x^2)+5$

$\boxed{f(g(x)) = 3x^2+5}$

$g(f(x)) = x^2$

$g(f(x)) = (3x+5)^2$

$\boxed{g(f(x)) = 9x^2+30x+25}$

127. If $f(x)=2x-7$ and $g(x)=x^2+x-10$, find $(f\circ g)(x)$ and $(g\circ f)(x)$.

$f(g(x)) = 2x-7$

$f(g(x)) = 2(x^2+x-10)-7$

$\boxed{f(g(x)) = 2x^2+2x-27}$

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

$g(f(x)) = (2x-7)^2+(2x-7)-10$

$g(f(x)) = 4x^2-28x+49+2x-7-10$

$\boxed{g(f(x)) = 4x^2-26x+32}$

Evaluate each composition function, where $f(x)=2x-3$, $g(x)=x^2-5x$, and $h(x)=4-3x^2$.

128. $(g\circ f)(-5)$

$g(f(-5))$

$f(-5) = 2(-5)-3$

$f(-5) = -13$

$g(-13) = (-13)^2-5(-13)$

$g(-13) = 234$

$\boxed{g(f(-5)) = 234}$

129. $(f\circ g)(14)$

$f(g(14))$

$g(14) = (14)^2-5(14)$

$g(14) = 126$

$f(126) = 2(126)-3$

$\boxed{f(g(14)) = 249}$

130. $(g\circ h)(-1)$

$\boxed{g(h(-1)) = -4}$

131. $(f\circ f)(0)$

$\boxed{f(f(0)) = -9}$

132. $(g\circ f)(5c)$

$\boxed{g(f(5c)) = 100c^2-110c+24}$