



## **Topics covered in the summer packet**

*You can search for these topics on Google to find videos and more practice.*

- 1-7: Given an equation, identify parent function and describe the transformation
- 8-10: Graphing a line
- 11: Solving Systems of Equations by Graphing
- 12-13: Use transformations to graph a quadratic function and an absolute value function
- 14-17: Adding, Subtracting, Multiplying and Dividing Fractions.
- 18-21: Solving Equations
- 22: Solving Proportions
- 23: Finding the slope between two points.
- 24: Solve a system of equations by substitution
- 25: Rationalize a denominator
- 26: Solving a literal equation
- 27: Given an equation, find the x- and y-intercepts
- 28: Solving Inequalities in one variable
- 29-38: Factoring quadratics
- 39-42: Solving a quadratic equation by factoring
- 43: Simplifying a rational expression
- 44-45: Multiplying and dividing rational expressions
- 46-48: Properties of exponents
- 49-50: Simplifying radicals
- 51-52: End behavior of a polynomial function
- 53-56: Rational functions
  - Finding vertical asymptotes
  - Finding holes
  - Finding the x- and y-intercepts
  - Finding the horizontal asymptotes
  - Finding the domain and writing it in interval notation
- 57-58: Graph a rational function
- 59: Evaluating functions
- 60: Synthetic division
- 61: Long division
- 62: Simplifying complex fractions
- 63-64: Converting between radical and exponential
- 65-66: Converting between log and exponential
- 67: Evaluating a log expression
- 68-69: Expanding and condensing log expressions
- 70-73: Graph an exponential, log, cube root and square root function using transformations
- 74: Solve a quadratic by taking square roots
- 75: Solve a quadratic using the quadratic formula
- 76-77: Pythagorean Theorem
- 78-80: Ratios of Trig Functions

## Parent Function Transformations

Give the name of the parent function and describe the transformation represented.

1.  $g(x) = x^2 - 1$  Name: \_\_\_\_\_

Transformation: \_\_\_\_\_

2.  $f(x) = 2|x-1|$  Name: \_\_\_\_\_

Transformation: \_\_\_\_\_

3.  $h(x) = \sqrt{x-2}$  Name: \_\_\_\_\_

Transformation: \_\_\_\_\_

4.  $g(x) = x^3 + 3$  Name: \_\_\_\_\_

Transformation: \_\_\_\_\_

5.  $g(x) = \frac{1}{x+6}$  Name: \_\_\_\_\_

Transformation: \_\_\_\_\_

6.  $f(x) = |x+5| - 2$  Name: \_\_\_\_\_

Transformation: \_\_\_\_\_

7.  $h(x) = \frac{1}{x} - 5$  Name: \_\_\_\_\_

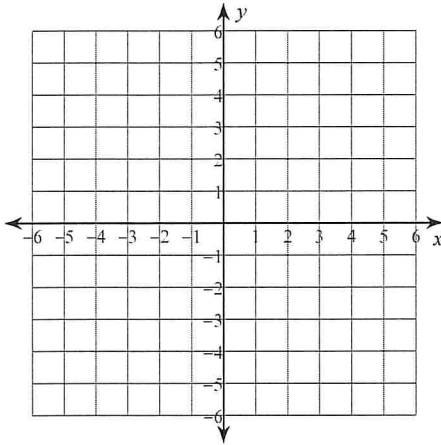
Transformation: \_\_\_\_\_

## Summer Packet

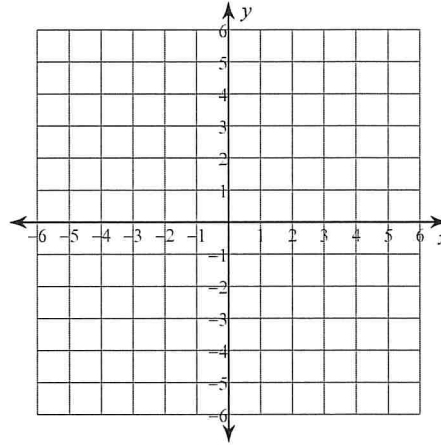
Date \_\_\_\_\_ Period \_\_\_\_\_

Sketch the graph of each line.

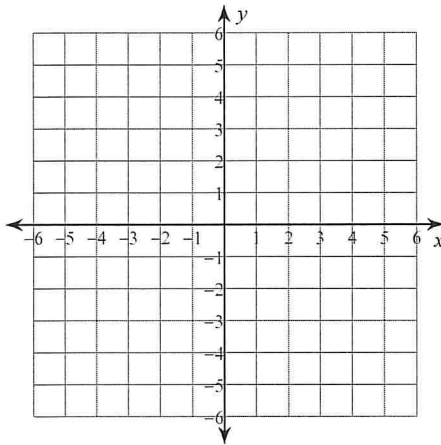
8)  $4x - y = 3$



9)  $y = 4$



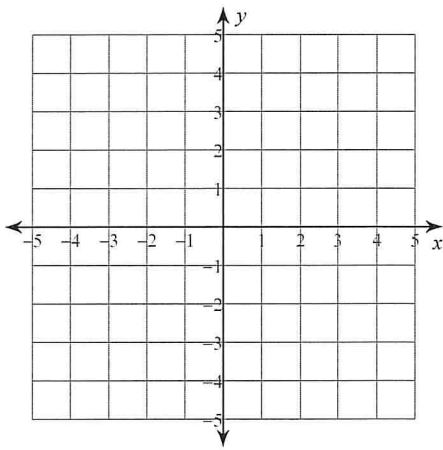
10)  $y = -\frac{1}{3}x + 2$



Solve each system by graphing.

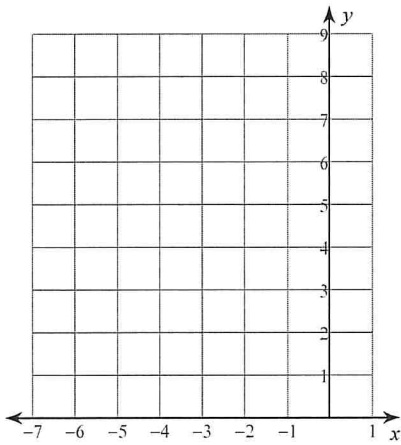
$$11) y = \frac{1}{2}x + 1$$

$$y = -\frac{1}{4}x - 2$$

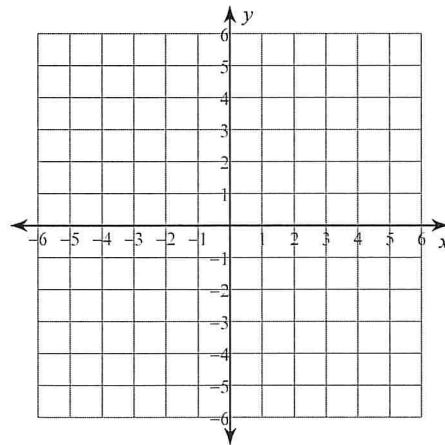


Sketch the graph of each function using transformations.

$$12) f(x) = (x + 2)^2 + 4$$



$$13) y = -|x - 4|$$



**Find each sum.**

$$14) 6 + \left(-\frac{11}{8}\right)$$

**Find each difference.**

$$15) \left(-\frac{3}{2}\right) - 4\frac{5}{8}$$

**Find each product.**

$$16) \left(\frac{3}{2}\right)\left(-\frac{8}{5}\right)$$

**Find each quotient.**

$$17) \frac{-2\frac{3}{4}}{-1\frac{4}{5}}$$

**Solve each equation.**

18)  $5a - 4a = -1$

19)  $124 = -4(4p + 1)$

20)  $6n - 1 = -15 - 3n + 2n$

21)  $-x + 26 = 7 + 3(x - 3)$

**Solve each proportion.**

22)  $\frac{n - 7}{n} = \frac{4}{3}$

**Find the slope of the line through each pair of points.**

23)  $(2, -6), (-10, -8)$

**Solve each system by substitution.**

24)  $y = 3x + 11$   
 $y = 6x + 23$

**Simplify.**

25)  $\frac{2\sqrt{5}}{\sqrt{2}}$

**Solve for y.**

26)  $x - 12 + 4y = 0$

**Find the x- and y-intercepts.**

27)  $x - 2y = -4$

**Solve each inequality.**

28)  $1 - 2r > -19$

**Factor the common factor out of each expression.**

29)  $9x^2 - 9x$

30)  $8x^3 + 64x + 24$



**Factor each completely.**

31)  $m^2 + 11m + 18$

32)  $2k^2 + 7k + 6$

33)  $4n^2 - n - 3$

34)  $k^2 - 6k - 7$

35)  $b^2 - 12b + 35$

36)  $3n^2 - 21n + 36$

37)  $25v^2 - 4$

38)  $8b^2 + 16b + 6$

**Solve each equation by factoring.**

39)  $2x^2 + 7x + 6 = 0$

40)  $v^2 + 3v - 6 = -6$

41)  $2n^2 = -2 - 5n$

42)  $r^2 - 6r - 7 = 0$

**Simplify each and state the excluded values.**

43)  $\frac{2n + 2}{n^2 + 10n + 9}$

**Simplify each expression.**

44)  $\frac{x - 2}{x^2 - 4} \cdot \frac{7x^2 + 14x}{x - 9}$

45)  $\frac{1}{m + 6} \div \frac{m + 8}{m^2 - 36}$

**Simplify. Your answer should contain only positive exponents.**

46)  $2yx^2 \cdot x^4y^3$

47)  $(4x^3)^2$

48)  $\frac{x}{3x^2}$

**Simplify.**

49)  $\sqrt{80}$

50)  $4\sqrt{27}$

**Describe the end behavior of each function.**

51)  $f(x) = x^3 + 11x^2 + 40x + 45$

52)  $f(x) = -x^4 + 2x^3 + 2x^2 - 3$

**Identify the vertical asymptotes of each.**

53)  $f(x) = \frac{-2x + 8}{x^2 - 6x + 8}$

**Identify the holes of each.**

54)  $f(x) = \frac{x^2 + 3x}{3x^2 + 12x + 9}$

**Identify the x- and y-intercepts of each.**

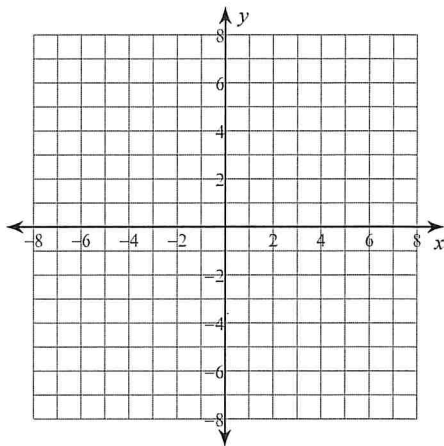
55)  $f(x) = \frac{x^3 + 5x^2 + 4x}{4x^2 - 16}$

State the domain for the function using interval notation.

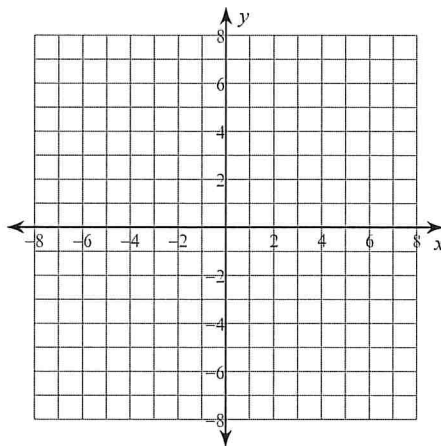
$$56) f(x) = \frac{x^3 - 3x^2 - 4x}{4x^2 + 4x}$$

Graph each function.

$$57) f(x) = \frac{x^2 - 16}{x^2 + 5x + 4}$$



$$58) f(x) = \frac{x^2 + x - 12}{-3x^2 + 12}$$



Evaluate each function.

$$59) h(t) = 4t - 1; \text{ Find } h(-9)$$

**Divide using synthetic division.**

60)  $(x^4 + 4x^3 - 8x - 39) \div (x + 4)$

**Divide using long division.**

61)  $(2v^3 - 13v^2 + 10v + 20) \div (v - 5)$

**Simplify each expression.**

62) 
$$\frac{\frac{2}{u^2} - \frac{u^2}{2}}{\frac{u^2}{3}}$$

**Write each expression in radical form.**

63)  $6^{\frac{2}{3}}$

**Write each expression in exponential form.**

64)  $(\sqrt{2})^3$

**Rewrite each equation in logarithmic form.**

65)  $u^{-3} = v$

**Rewrite each equation in exponential form.**

66)  $\log_3 141 = b$

**Evaluate each expression.**

67)  $\log_2 8$

**Expand each logarithm.**

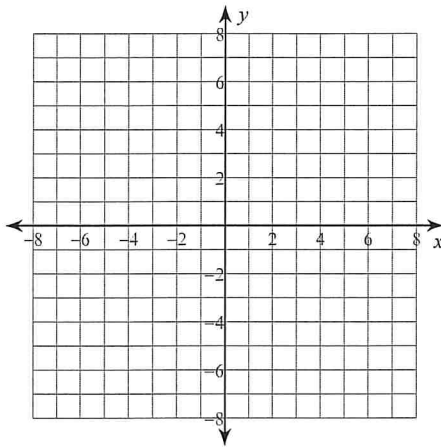
68)  $\log_8 (w^5 \sqrt{u})$

**Condense each expression to a single logarithm.**

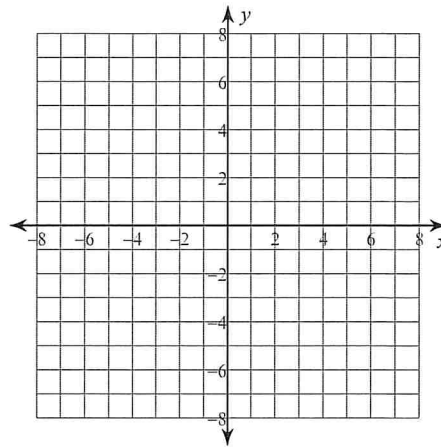
69)  $5 \log_9 x - 4 \log_9 y$

Sketch the graph of each function using transformations.

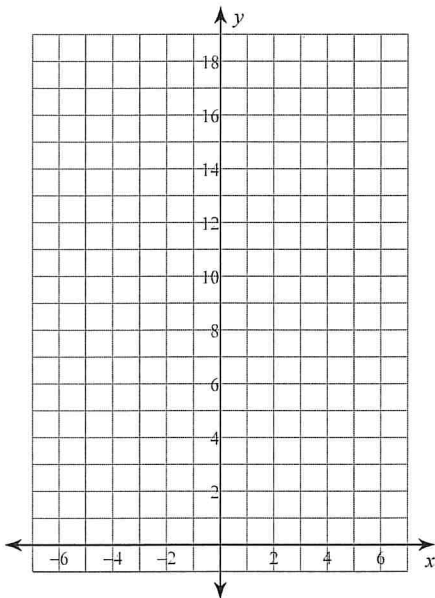
70)  $y = 5 + \sqrt[3]{x - 3}$



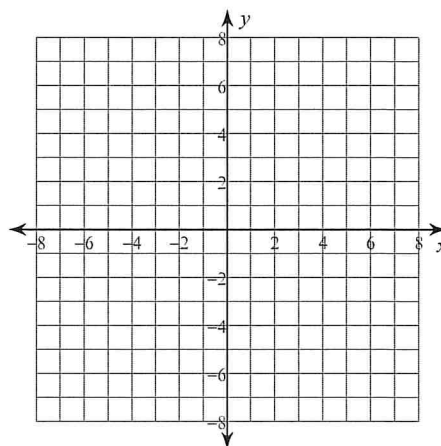
71)  $y = \sqrt{x - 3} - 1$



72)  $f(x) = 3^x - 1$



73)  $f(x) = \log_2(x - 3) + 5$





**Solve the equation by taking square roots.**

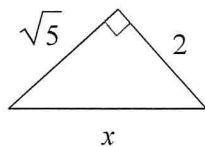
74)  $5x^2 + 5 = -13$

**Solve the equation with the quadratic formula.**

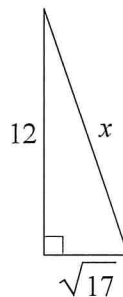
75)  $3p^2 - 4p = 1$

Find the missing side of each triangle. Leave your answers in simplest radical form.

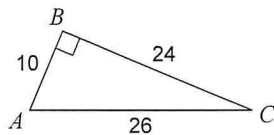
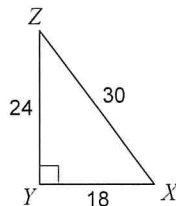
76)



77)



Find the value of each trigonometric ratio.

78)  $\sin C$ 79)  $\cos Z$ 80)  $\tan A$ 