



# JEDDAH KNOWLEDGE INTERNATIONAL SCHOOL

Grade 11

# Summer work Booklet Math Algebra 2

**2020-2021**

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Teacher: \_\_\_\_\_

## Function Inverses

State if the given functions are inverses.

$$1) \quad g(x) = 4 - \frac{3}{2}x$$

$$f(x) = \frac{1}{2}x + \frac{3}{2}$$

$$2) \quad g(n) = \frac{-12 - 2n}{3}$$

$$f(n) = \frac{-5 + 6n}{5}$$

$$3) \quad f(n) = \frac{-16 + n}{4}$$

$$g(n) = 4n + 16$$

$$4) \quad f(x) = -\frac{4}{7}x - \frac{16}{7}$$

$$g(x) = \frac{3}{2}x - \frac{3}{2}$$

$$5) \quad f(n) = -(n + 1)^3$$

$$g(n) = 3 + n^3$$

$$6) \quad f(n) = 2(n - 2)^3$$

$$g(n) = \frac{4 + \sqrt[3]{4n}}{2}$$

$$7) \quad f(x) = \frac{4}{-x - 2} + 2$$

$$h(x) = -\frac{1}{x + 3}$$

$$8) \quad g(x) = -\frac{2}{x} - 1$$

$$f(x) = -\frac{2}{x + 1}$$

Find the inverse of each function.

$$9) \quad h(x) = \sqrt[3]{x} - 3$$

$$10) \quad g(x) = \frac{1}{x} - 2$$

$$11) \quad h(x) = 2x^3 + 3$$

$$12) \quad g(x) = -4x + 1$$

$$13) g(x) = \frac{7x + 18}{2}$$

$$14) f(x) = x + 3$$

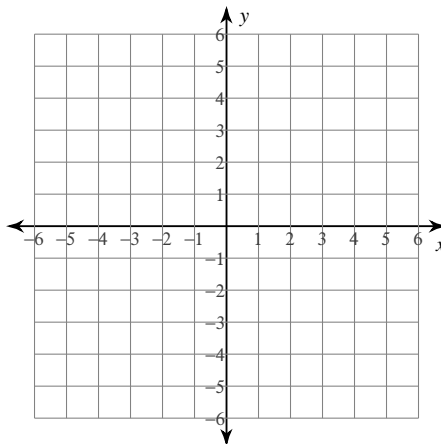
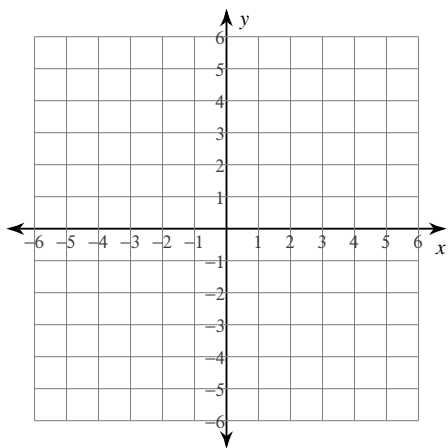
$$15) f(x) = -x + 3$$

$$16) f(x) = 4x$$

**Find the inverse of each function. Then graph the function and its inverse.**

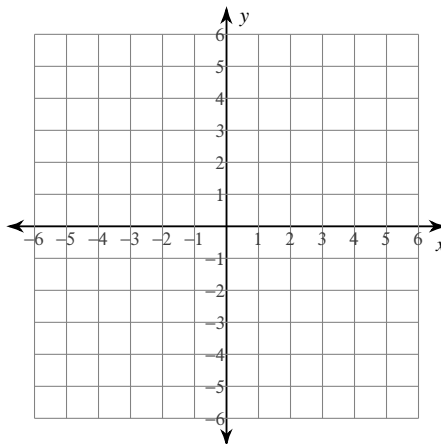
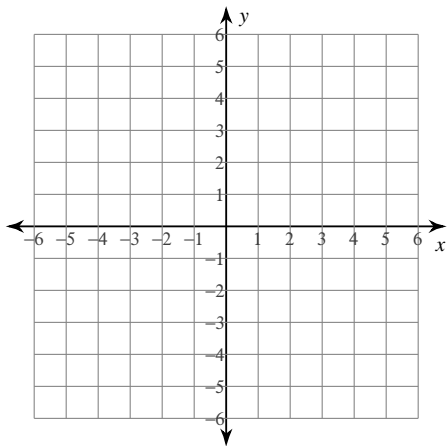
$$17) f(x) = -1 - \frac{1}{5}x$$

$$18) g(x) = \frac{1}{x-1}$$



$$19) f(x) = -2x^3 + 1$$

$$20) g(x) = \frac{-x-5}{3}$$



## Function Operations

**Perform the indicated operation.**

1)  $g(n) = n^2 + 4 + 2n$   
 $h(n) = -3n + 2$   
Find  $(g \cdot h)(1)$

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

3)  $h(x) = 3x + 3$   
 $g(x) = -4x + 1$   
Find  $(h + g)(10)$

4)  $g(a) = 3a + 2$   
 $f(a) = 2a - 4$   
Find  $\left(\frac{g}{f}\right)(3)$

5)  $g(x) = 2x - 5$   
 $h(x) = 4x + 5$   
Find  $g(3) - h(3)$

6)  $g(a) = 2a - 1$   
 $h(a) = 3a - 3$   
Find  $(g \cdot h)(-4)$

7)  $g(t) = t^2 + 3$   
 $h(t) = 4t - 3$   
Find  $(g \cdot h)(-1)$

8)  $g(n) = 3n + 2$   
 $f(n) = 2n^2 + 5$   
Find  $g(f(2))$

9)  $g(x) = -x^2 - 1 - 2x$   
 $f(x) = x + 5$   
Find  $(g - f)(x)$

10)  $f(x) = 3x - 1$   
 $g(x) = x^2 - x$   
Find  $\left(\frac{f}{g}\right)(x)$

11)  $g(a) = -3a - 3$   
 $f(a) = a^2 + 5$   
Find  $(g - f)(a)$

12)  $h(t) = 2t + 1$   
 $g(t) = 2t + 2$   
Find  $(h - g)(t)$

13)  $f(x) = 2x^3 - 5x^2$   
 $g(x) = 2x - 1$   
Find  $(f \cdot g)(x)$

14)  $h(n) = 4n + 5$   
 $g(n) = 3n + 4$   
Find  $(h - g)(n)$

15)  $g(a) = -3a^2 - a$   
 $h(a) = -2a - 4$   
Find  $\left(\frac{g}{h}\right)(a)$

16)  $f(n) = 2n$   
 $g(n) = -n - 4$   
Find  $(f \circ g)(n)$

17)  $h(a) = 3a$   
 $g(a) = -a^3 - 3$   
Find  $\left(\frac{h}{g}\right)(a)$

18)  $g(n) = 2n + 3$   
 $h(n) = n - 1$   
Find  $(g \circ h)(n)$

19)  $h(x) = x^2 - 2$   
 $g(x) = 4x + 1$   
Find  $(h \circ g)(x)$

20)  $g(t) = 2t + 5$   
 $f(t) = -t^2 + 5$   
Find  $(g + f)(t)$

21)  $g(x) = 2x - 2$   
 $f(x) = x^2 + 3x$   
Find  $(g \circ f)(-2 + x)$

22)  $g(a) = 2a + 2$   
 $h(a) = -2a - 5$   
Find  $(g \circ h)(-4 + a)$

## Graphing Radicals

Identify the domain and range of each.

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

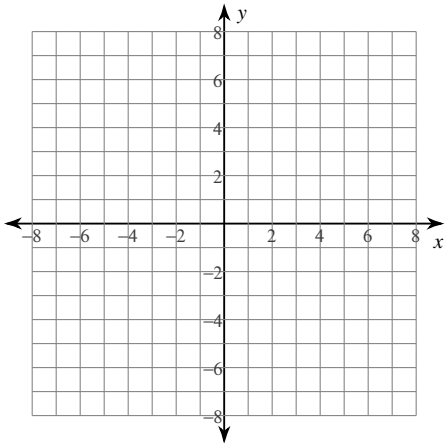
2)  $y = \sqrt{x+2} - 3$

3)  $y = \sqrt[3]{x+1} - 4$

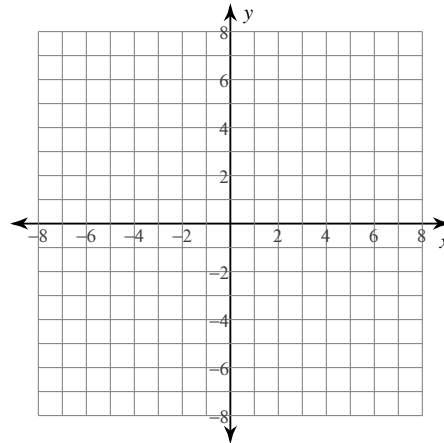
4)  $y = \sqrt[3]{x-1} - 1$

Sketch the graph of each function.

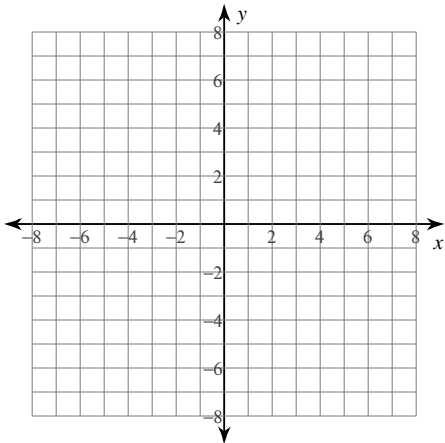
5)  $y = \sqrt{x} + 5$



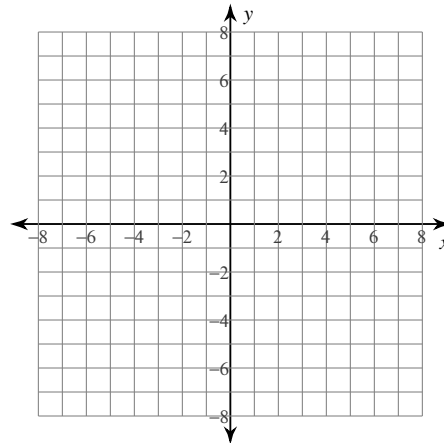
6)  $y = \sqrt{x} - 2$



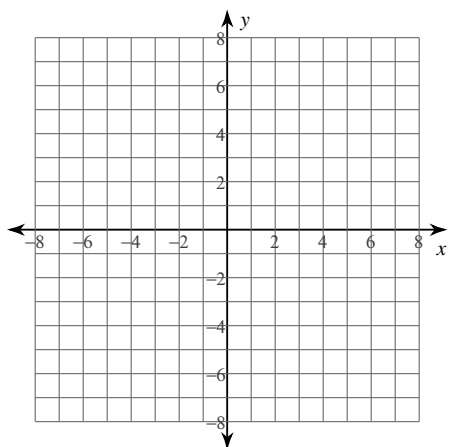
7)  $y = 3 + \sqrt{x}$



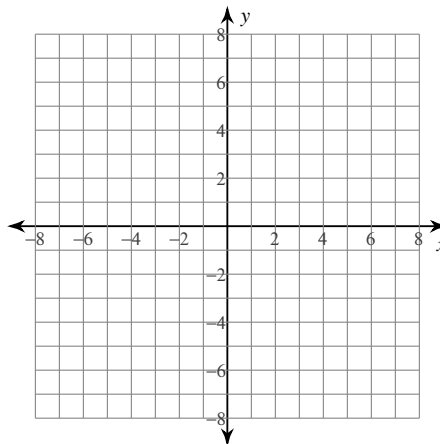
8)  $y = \sqrt{x} + 4$



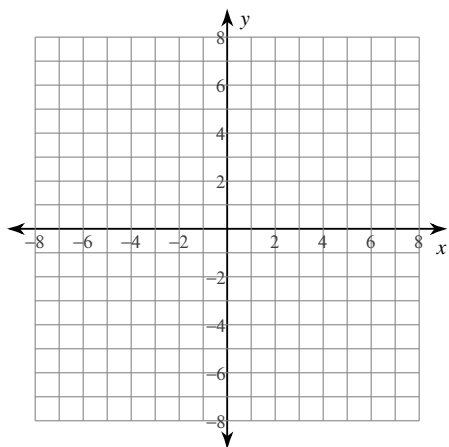
$$9) y = -2\sqrt{x+2}$$



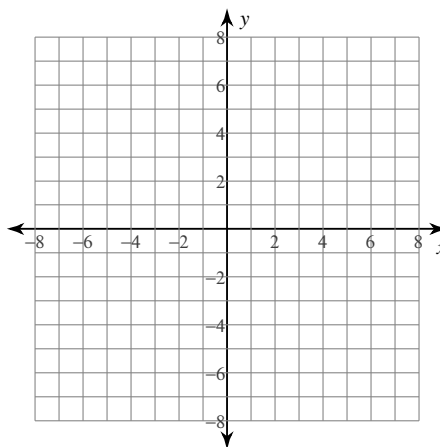
$$10) y = \frac{1}{2}\sqrt[3]{x+1} + 4$$



$$11) y = \sqrt{x-4} - 2$$

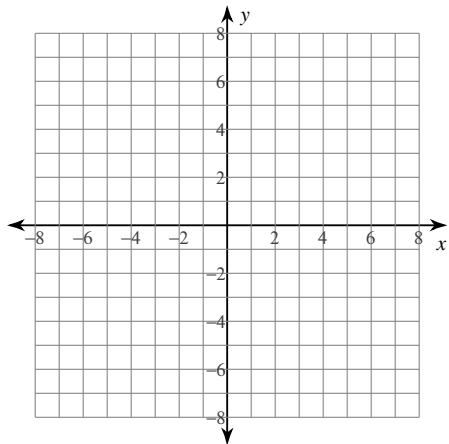


$$12) y = -2 + \sqrt[3]{x}$$

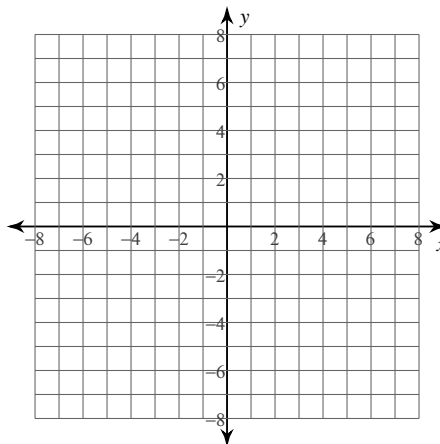


**Identify the domain and range of each. Then sketch the graph.**

$$13) y = 4\sqrt{x-2} - 1$$



$$14) y = -\frac{3}{4}\sqrt{x-1} + 4$$



## Rational Exponent Equations

**Solve each equation.**

1)  $27 = x^{\frac{3}{2}}$

2)  $m^{\frac{3}{4}} = 27$

3)  $x^{-\frac{3}{2}} = \frac{1}{729}$

4)  $7 = r^{\frac{1}{2}}$

5)  $v^{\frac{5}{4}} = 243$

6)  $n^{\frac{3}{2}} = 125$

7)  $(n - 27)^{\frac{3}{2}} = 64$

8)  $26 = -1 + (27x)^{\frac{3}{4}}$



$$9) 3125 = (-1 - 18p)^{\frac{5}{3}}$$

$$10) 5 = 3 + 4a^{-\frac{1}{6}}$$

$$11) 4b^{-\frac{3}{4}} + 10 = \frac{21}{2}$$

$$12) -x^{\frac{3}{2}} = -27$$

$$13) -54 = 10 - (m - 10)^{\frac{3}{2}}$$

$$14) -5126 = -6 - 5(3x + 22)^{\frac{5}{3}}$$

$$15) 9 + 5\sqrt[3]{2m} = 29$$

$$16) 3646 = 1 + 5(4r + 17)^{\frac{3}{2}}$$

$$17) -646 = -3(65 - n)^{\frac{3}{2}} + 2$$

$$18) -3 + (8 - 2x)^{\frac{5}{4}} = 29$$

## Simplifying Radicals

**Simplify. Use absolute value signs when necessary.**

1)  $\sqrt{24}$

2)  $\sqrt[3]{1000}$

3)  $\sqrt[3]{-162}$

4)  $\sqrt{512}$

5)  $\sqrt[4]{128n^8}$

6)  $\sqrt{98k}$

7)  $\sqrt[5]{224r^7}$

8)  $\sqrt[3]{24m^3}$

9)  $\sqrt{392x^2}$

10)  $\sqrt{512x^2}$

11)  $\sqrt[4]{405x^3y^2}$

12)  $\sqrt[3]{-16a^3b^8}$

13)  $\sqrt[4]{128x^7y^7}$

14)  $\sqrt[3]{16xy}$

15)  $\sqrt[6]{448x^7y^7}$

16)  $\sqrt[3]{56x^5y}$

**Critical thinking questions:**

17) What simplifies into  $2mn^2\sqrt[3]{5mn^2}$  ?

18) Simplify  $\sqrt[n]{3 \cdot 2^n \cdot x^{2n} y^{n+3}}$