

Name: \_\_\_\_\_

*Key*

Class Period: \_\_\_\_\_

## Math 2: Unit 4 Review Sheet

## Part 1. Exponent Rules

Fully simplify the following exponents using exponent rules.

1.  $(-7x^2)(4x^7)$

$$-28x^9$$

2.  $(-3x^6y^2)(2x^5y^3)$

$$-6x^{11}y^5$$

3.  $(2x^6y^2)^0(3x^7y)(-5xy^7)$

$$-15x^8y^8$$

4.  $(2x^6)^3$

$$2^3x^{18}$$

$$8x^{18}$$

5.  $(4x^6y^4z^2)^2$

$$4^2x^{12}y^8z^4$$

$$16x^{12}y^8z^4$$

6.  $(5xy^8)^3(2x^6y^3)^2$

$$(125x^3y^{24})(4x^{12}y^6)$$

$$500x^{15}y^{30}$$

7.  $\frac{20x^6}{2x^3}$

$$10x^3$$

8.  $\left(\frac{6xy^6}{2x^2y^7}\right)^0$

$$1$$

9.  $\frac{28x^4y^7}{16x^{-3}y^{-3}}$

$$\frac{7x^7y^{10}}{4}$$

## Part 2. Radicals and Fractional Exponents

Convert each radical to a fractional exponent

10.  $\sqrt[5]{x^6}$

$$x^{6/5}$$

11.  $\sqrt{y^3}$

$$y^{3/2}$$

12.  $\frac{1}{\sqrt[9]{(5z)^5}}$

$$\frac{1}{(5z)^{5/9}}$$

13.  $\sqrt[3]{2x^4}$

$$(2x^4)^{1/3} \text{ OR } 2^{1/3}x^{4/3}$$

Convert each fractional exponent to a radical

14.  $x^{1/3}$

$$\sqrt[3]{x}$$

15.  $y^{-5/11}$

$$\sqrt[11]{y^{-5}} = \sqrt[11]{\frac{1}{y^5}}$$

16.  $(5z)^{2/3}$

$$\sqrt[3]{(5z)^2}$$

17.  $6x^{4/9}$

$$6\sqrt[9]{x^4}$$

Solve the radical equation using inverses.

18.  $x^{1/4} = 5$

$$(\sqrt[4]{x})^4 = (5)^4$$

$$x = 625$$

19.  $2x^{1/2} - 4 = 50$

$$\begin{aligned} 2\sqrt{x} - 4 &= 50 \\ 2\sqrt{x} &= 54 \\ \sqrt{x} &= 27 \\ (\sqrt{x})^2 &= (27)^2 \end{aligned}$$

$$x = 729$$

20.  $\sqrt{3x-1} + 5 = 100$

$$\begin{aligned} \sqrt{3x-1} &= 95 \\ 3x-1 &= 9025 \\ 3x &= 9026 \end{aligned}$$

$$x = \frac{9026}{3}$$

$$21. \sqrt[3]{(x-1)^3} = \sqrt[3]{4^3}$$

$$\sqrt{(x-1)^3} = \sqrt{4}$$

$$x-1 = \pm 2$$

$$x-1 = 2$$

$$x = 3$$

$$x-1 = -2$$

$$x = -1$$

$$22. 3x^{\frac{2}{3}} = 27$$

$$3\sqrt[3]{x^2} = 27$$

$$\sqrt[3]{x^2} = 9$$

$$\sqrt{x^2} = \sqrt{729}$$

$$x = \pm 27$$

$$23. \sqrt{4x-2} = \sqrt{2x+10}$$

$$4x-2 = 2x+10$$

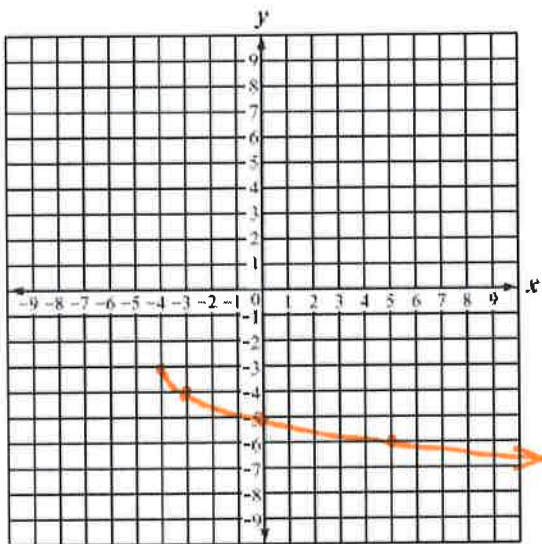
$$2x-2 = 10$$

$$2x = 12$$

$$x = 6$$

### Graphing & Describing Functions

$$24. y = -\sqrt{x+4} - 3$$



Transformations:

reflect over x-axis, left 4,  
down 3

Domain:  $x \geq -4$

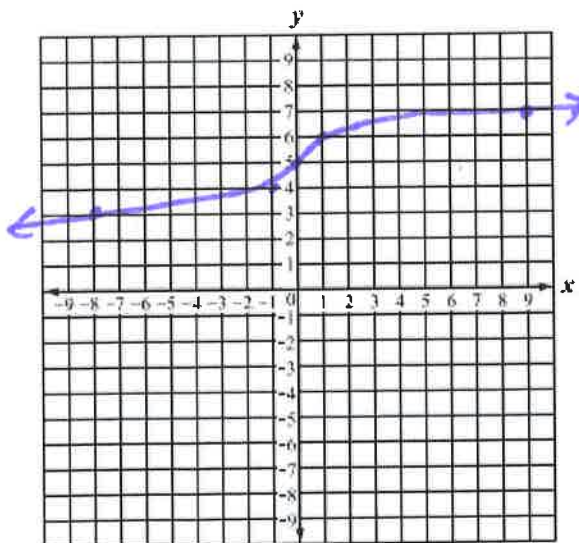
Range:  $y \leq -3$

Increasing Interval: never

Decreasing Interval:  $(-4, \infty)$

End Behavior: As  $x \rightarrow \infty, y \rightarrow -\infty$ .

$$25. y = \sqrt[3]{x} + 5$$



Transformations:

up 5

Domain:  $\mathbb{R}$

Range:  $\mathbb{R}$

Increasing Interval:  $(-\infty, \infty)$

Decreasing Interval: never

End Behavior: As  $x \rightarrow -\infty, y \rightarrow -\infty$ .  
As  $x \rightarrow \infty, y \rightarrow \infty$ .