Name: Key

Algebra II

Rational Exponents and Radical Functions

Review for Chapter 5

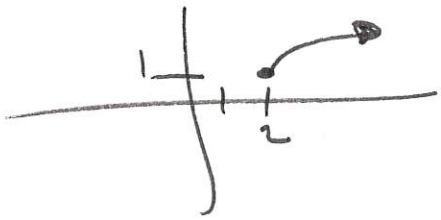
1.

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

a. Graph

b. Domain: $\{x \in \mathbb{R} \mid x \geq 2\}$

c. Range: $\{y \in \mathbb{R} \mid y \geq 1\}$



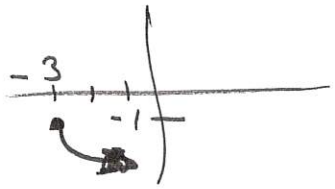
2.

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

a. Graph

b. Domain: $x \geq -3$

c. Range: $y \leq -1$



Simplify

a. $\sqrt{16y^4}$

$4y^2$

b. $\pm\sqrt{(x^2-6)^8}$

$\pm(x^2-6)^4$

c. $\sqrt[5]{243a^{20}b^{25}}$

$3a^4b^5$

d. $-\sqrt{-16x^4y^8}$

$-4x^2y^4i$

$\sqrt{-1} = i$

a. $\sqrt{32x^8}$

$\sqrt{2^5 x^8}$

$2^2 x^4 \sqrt{2}$

$4x^4\sqrt{2}$

b. $\sqrt[4]{16a^{24}b^{13}}$

$2a^6b^3\sqrt[4]{b}$

c. $\sqrt[3]{x^7y^9}$

$x^2y^3\sqrt[3]{x}$

Rationalize

a. $\sqrt{\frac{a^6}{b^3}} = \frac{a^3}{b\sqrt{b}}\left(\frac{\sqrt{b}}{\sqrt{b}}\right) = \frac{a^3\sqrt{b}}{b^2}$

b. $\frac{3+x}{\sqrt{2}+x}\left(\frac{\sqrt{2}-x}{\sqrt{2}-x}\right) = \frac{3\sqrt{2}-3x+x\sqrt{2}-x^2}{2-x^2}$ Nothing Cancels

Simplify

a. $a^{\frac{1}{5}} = \sqrt[5]{a}$

b. $a^{\frac{2}{7}} \cdot a^{\frac{4}{7}}$ $a^{2/7+4/7}$ $a^{6/7}$ $= \sqrt[7]{a^6}$

c. $\sqrt[7]{b^3} = b^{3/7}$

d. $p^{\frac{1}{4}} \cdot p^{\frac{9}{4}}$ $p^{1/4+9/4}$ $= p^{10/4}$ $= p^{5/2}$ $= p^2\sqrt{p}$

Solve

1. $3 + \sqrt{5x-10} \le 8$

$-3 \quad -3$

$\left(\sqrt{5x-10}\right)^2 \le (5)^2$

$5x - 10 \le 25$

$+10 \quad +10$

$\frac{5x}{5} \le \frac{35}{5}$

$x \le 7$

2. $2(6x-3)^{\frac{1}{3}} - 4 = 0$

$+4 \quad +4$

$\frac{2(6x-3)^{1/3}}{2} = \frac{4}{2}$

$\left((6x-3)^{1/3} = 2\right)^3$

$6x - 3 = 8$

$+3 \quad +3$

$6x = 11$

$x = 11/6$