6.1 - I will simplify perfect roots

$$\sqrt{9} = \sqrt{3^2} = 3$$

$$3 \overset{\frown}{} 3$$

$$-\sqrt{49} = -\sqrt{7^2} = -7$$

$$7 \overset{\frown}{} 7$$

$$\pm\sqrt{100} = \pm 10$$

$$\sqrt{-81} = \sqrt{-1 \cdot 9^2} = 9i$$

$$-1 \overset{\frown}{} 81$$

$$9 \overset{\frown}{} 9$$

$$\sqrt{x^4 y^8} = \sqrt{(x^2)^2 (y^4)^2} = x^2 y^4$$

$$x^2 \overset{\frown}{} x^2 \quad y^4 \overset{\frown}{} y^4$$

$$\sqrt{16 x^6 y^{24}} = 4 x^3 y^{12}$$

$$\sqrt{121 x^2 y^{10} z^{12}} = 11 x y^5 z^6$$

$$\sqrt[3]{x^9 y^{15}} = x^3 y^5$$

$$\sqrt[4]{x^8 y^{20}} = x^2 y^5$$

$$\sqrt[7]{x^{14} y^{28} z^{49}} = x^2 y^4 z^7$$

$$\sqrt[3]{64} = \sqrt[3]{4^3} = 4$$

8   8
2   4   2   4
4

$$\sqrt[4]{81 x^8 y^{16}} = \sqrt[4]{3^4 x^8 y^{16}} = 3 x^2 y^4$$

9   9
3 3   3 3

$$\sqrt[3]{64 x^{12} y^{27}} = \sqrt[3]{4^3 x^{12} y^{27}} = 4 x^4 y^9$$

$$-\sqrt[4]{\frac{16}{81}} = -\sqrt[4]{\frac{2^4}{3^4}} = -\frac{2}{3}$$

$$\sqrt[3]{.027} = \sqrt[3]{\frac{27}{1000}} = \sqrt[3]{\frac{3^3}{10^3}} = \frac{3}{10}$$

$$\sqrt[3]{-64} = \sqrt[3]{-4^3} = -4$$

$$-4 \quad -4 \quad -4$$

$$\sqrt[4]{-16} = \sqrt[4]{-1 \cdot 2^4} = 2i$$

$$-1 \quad 4 \quad 4$$
$$2 \cdot 2 \quad 2 \cdot 2$$

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

$$\sqrt[6]{-1} = i$$

$$\sqrt[3]{-27x^9y^{12}} = \sqrt[3]{-3^3x^9y^{12}} = -3x^3y^4$$

$$\sqrt[3]{(3x^2y^5)^9} = (3x^2y^5)^3 = 27x^6y^{15}$$

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

$$-\sqrt[7]{(2x-7)^7} = -(2x-7) = -2x+7$$

$$\sqrt[2]{x^2-10x+25}$$

$$\sqrt[2]{(x-5)^2}$$

$$\boxed{= x-5}$$

$$\underset{-5\cdot 5}{\overset{mult\ 25}{}} \quad \underset{-5+-5}{\overset{add\ -10}{}}$$

$$x^2-5x-5x+25$$
$$x(x-5)-5(x-5)$$
$$(x-5)(x-5)$$
$$(x-5)^2$$

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