8.7 Simplifying Radical Expressions

Obj: 1. Evaluate radical expressions
2. Simplify using properties of radicals.

$\sqrt{x} = x^{\frac{1}{2}}$

$\sqrt[3]{x} = x^{\frac{1}{3}}$

$\sqrt[4]{x} = x^{\frac{1}{4}}$

$\vdots$

$\sqrt{-16}$ imaginary

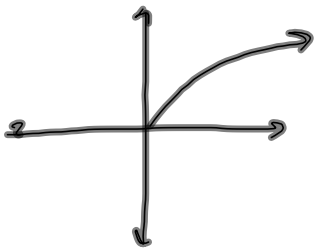
$\_ \cdot \_ = -16$

$\sqrt[3]{-8} = -2$

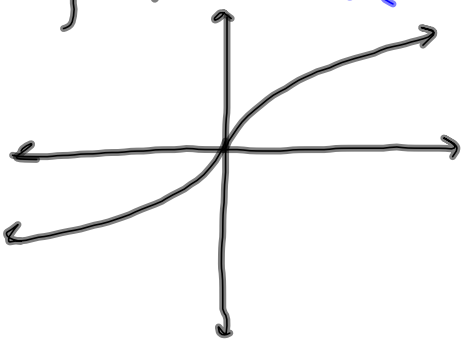
$\_ \cdot \_ \cdot \_ = -8$

Jan 25-11:01 AM

$y = \sqrt{x}$



$y = \sqrt[3]{x} = x^{(\frac{1}{3})}$



Jan 25-11:23 AM

Evaluate:

$3\cdot\sqrt[3]{27} - 5$

$3 \cdot 3 - 5$

$9 - 5$

4

$-2\sqrt[3]{-125} - 10$

$-2 \cdot -5 - 10$

$10 - 10$

0

$-6\sqrt[3]{-8} - 2$

$-6 \cdot -2 - 2$

$12 - 2$

10

Jan 25-11:27 AM

Properties

For any real # a:

$\sqrt[n]{a^n} = a$

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

Jan 25-11:32 AM

Simplify:

$\sqrt{49x^2y^5z^6}$

$7xy^2z^3\sqrt{y}$

$\sqrt{81x^3y^4z^6}$

$9xy^2z^3\sqrt{x}$

$\sqrt{64a^4b^3c^3}$

$8a^2c\sqrt{bc}$

Jan 25-11:33 AM

$\sqrt[3]{-27x^7y^3z^2}$

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

Jan 25-11:42 AM

$(6+\sqrt{12})+(-7+\sqrt{75})$

$6+\sqrt{12}-7+\sqrt{75}$

$\sqrt{4\cdot3}\qquad\sqrt{25\cdot3}$

$-1+2\sqrt{3}+5\sqrt{3}$

$-1+7\sqrt{3}$

$(-5-\sqrt{18})-(6+\sqrt{50})$

$-5-\sqrt{18}-6-\sqrt{50}$

$\sqrt{9\cdot2}\qquad\sqrt{25\cdot2}$

$-11-3\sqrt{2}-5\sqrt{2}$

$-11-8\sqrt{2}$

$(-3+\sqrt{32})+(6+\sqrt{98})$

$\sqrt{16\cdot2}\qquad\sqrt{49\cdot2}$

$3+4\sqrt{2}+7\sqrt{2}$

$3+11\sqrt{2}$

Jan 25-11:44 AM

$(-3+5\sqrt{2})(4+2\sqrt{2})$

$-12-6\sqrt{2}+20\sqrt{2}+10\sqrt{4}$

$-12+14\sqrt{2}+20$

$8+14\sqrt{2}$

$(4-\sqrt{3})(2\sqrt{3}+5)$

$8\sqrt{3}+20-2\sqrt{9}-5\sqrt{3}$

$20+3\sqrt{3}-6$

$14+3\sqrt{3}$

$(3-5\sqrt{5})(-4+6\sqrt{5})$

$-12+18\sqrt{5}+20\sqrt{5}-30\sqrt{25}$

$-12+38\sqrt{5}-150$

$-162+38\sqrt{5}$

Jan 25-11:52 AM