9-3-13
3rd Trig
Simplifying radicals

$\sqrt{}$

$\sqrt{25}=5$

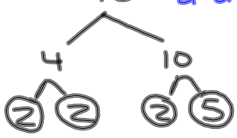
$\sqrt{20} \rightarrow$ irrational #

$\downarrow$

that goes on forever and doesn't repeat (can't be written as a fraction)

Prime factorization
Factor Tree

$40 = 2\cdot2\cdot2\cdot5$



$\sqrt{40}=\sqrt{\boxed{\cancel{2\cdot2}}\cdot2\cdot5}$

$2\sqrt{10}$

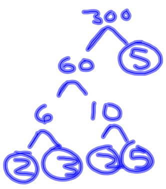
$\sqrt{504}=\sqrt{\boxed{\cancel{2\cdot2}}\cdot2\cdot\boxed{\cancel{3\cdot3}}\cdot7}$

$2\cdot3\sqrt{2\cdot7}$

$6\sqrt{14}$

$\sqrt{300}$

Factor Tree



$\sqrt{300}=\sqrt{\cancel{2\cdot2}\cdot3\cdot5\cdot5}$

$2\cdot5\sqrt{3}$

$10\sqrt{3}$

Simplify $\sqrt{a^3b^4}$

$\sqrt{\boxed{\cancel{aa}}\,a\,\boxed{\cancel{bb}}\boxed{\cancel{bb}}}$

$abb\sqrt{a}$

$ab^2\sqrt{a}$

② Simplify $\sqrt{8a^3}$

$2a\sqrt{\boxed{2\cdot 2}\cdot 2\,\boxed{a\cdot a}\,a}$

$2a\sqrt{2a}$

③ Simplify $\sqrt{-4}$

when you have a negative # inside square roots you have to deal with imaginary #s.

i

$\sqrt{-1} = i$

$-1 = i^2$

$\sqrt{-4} = \sqrt{-1\cdot\boxed{2\cdot 2}}$

$2i$

④ Simplify $\sqrt{-20}$

$\sqrt{\cancel{-1}\cdot\cancel{2\cdot 2}\cdot 5}$

$2i\sqrt{5}$ or $(2\sqrt{5})i$

⑤ Simplify $\sqrt[3]{a^7 b^3}$

$\sqrt[3]{\boxed{a a a}\,\boxed{a a a}\,a\,\boxed{b b b}}$

$aab\sqrt[3]{a}$

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

SAT

If $7^a \cdot 7^b = \frac{7^c}{7^d}$ what is d in terms of a, b, and c?

$7^3 \cdot 7^5 = \frac{7^{10}}{7^2}$

$2 = 10 - 5 - 3$

$d = c - b - a$

9-3-13

4^{th} Trig

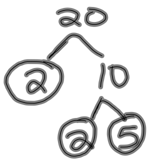
Simplifying Radicals

$\sqrt{20} \approx 4.47213595.....$

#s that go on forever and don't repeat are called irrational #s.

Prime factorization

Factor Tree



$\sqrt{20} = \sqrt{\boxed{\cancel{2 \cdot 2}} \cdot 5}$

$2\sqrt{5}$

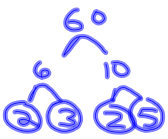
① Simplify $\sqrt{1260}$

$\sqrt{1260} = \sqrt{\boxed{\cancel{2 \cdot 2}}\boxed{\cancel{3 \cdot 3}} \cdot 5 \cdot 7}$

$2 \cdot 3\sqrt{5 \cdot 7}$

$6\sqrt{35}$

② Simplify $\sqrt{60}$



$\sqrt{\cancel{2 \cdot 2} \cdot 3 \cdot 5}$

$2\sqrt{15}$

③ Simplify $\sqrt{a^3b^2}$

$\sqrt{\cancel{aa}\,a\,\cancel{bb}}$

$ab\sqrt{a}$

④ Simplify $\sqrt{8a^5}$

$\sqrt{\cancel{2 \cdot 2} \cdot 2\, aaaaa}$

$2aa\sqrt{2a}$

$2a^2\sqrt{2a}$

⑤ Simplify $\sqrt[3]{a^4 b^6}$

$\sqrt[3]{aaaa\ bbbbbb}$

$abb\sqrt[3]{a}$

$ab^2\sqrt[3]{a}$

⑥ Simplify $\sqrt[3]{8a^5}$

$\sqrt[3]{2\cdot 2\cdot 2\cdot aaaaa}$

$2a\sqrt[3]{a^2}$

⑦ Simplify $\sqrt{-4}$

$\sqrt{-1} = i$ $\quad \sqrt{-1\cdot 2\cdot 2}$

$-1 = i^2$ $\quad 2i$

⑧ Simplify $\sqrt{-12}$

$\sqrt{-1\cdot 2\cdot 2\cdot 3}$

$2i\sqrt{3}$ $\quad (2\sqrt{3})i$

⑨ Simplify $\sqrt{-4a^2b^3c^4}$

$2abc^2 i\sqrt{-1\cdot 2\cdot 2\ aa\ bbb\ cccc}$

$2abc^2 i\sqrt{b}$