

BE-1B

TUESDAY 1-9-07

Simplify:

① $\sqrt{20}$

② $\sqrt{32}$

③ $\frac{1}{\sqrt{5}}$

④ $\sqrt{\frac{2}{3}}$

⑤ Find C EXACTLY (i.e., NO CALCULATORS)
if $a = 3$ $b = 6$

⑥ Simplify $\frac{\sqrt{2}}{\sqrt{6}}$

$$\text{Ex) } 3\sqrt{5} \cdot 2\sqrt{6}$$

$$\text{Ex) } \frac{4\sqrt{8}}{2\sqrt{3}}$$

(1.6)

How CAN you get rid of THIS
RADICAL in THE denominator?

$$\frac{2}{6-\sqrt{3}}$$

Why can't you multiply by $\frac{\sqrt{3}}{\sqrt{3}}$?

Recall the "DOS"

$$(a-b)(a+b) = a^2 - b^2$$

WE ARE GOING TO TAKE ADVANTAGE OF
the middle term going away AND THAT
squaring something "undoes" the $\sqrt{\quad}$

CONJUGATES! $(a-b)$ is THE CONJUGATE OF
 $(a+b)$ AND VICE VERSA.

💡 MULTIPLY TOP AND BOTTOM BY CONJUGATE OF $6-\sqrt{3}$

$$\frac{2}{6-\sqrt{3}} \cdot \frac{6+\sqrt{3}}{6+\sqrt{3}} = \frac{2(6+\sqrt{3})}{36-3} = \boxed{\frac{2(6+\sqrt{3})}{33}}$$

EX) Simplify $\frac{8}{3-\sqrt{2}}$

EX) Simplify $\frac{10}{\sqrt{7}+\sqrt{2}}$

WHAT ABOUT VARIABLES

Simplify $\sqrt{x^3}$

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

try $\sqrt{x^5} = \sqrt{x^4}\sqrt{x} = x^2\sqrt{x}$

trick: try $\sqrt{x^2} = x$

↑
ALWAYS ⊕
NO MATTER
WHAT SIGN
VALUE OF X IS

↑
Sometimes ⊕
Sometimes ⊖

FIX: $\sqrt{x^2} = |x|$

↑
EVEN EXPONENT

↑
ODD EXPONENT

💡 EVEN IN ODD OUT USE AV

EX 3 Pg. 587Simplify $\sqrt{40x^4y^5z^3}$
4 10

$$\sqrt{4} \sqrt{10} \sqrt{x^4} \sqrt{y^4} \sqrt{y} \sqrt{z^2} \sqrt{z}$$

CK ANY
EVEN/ODD?

$$\boxed{2x^2y^2z\sqrt{10yz}}$$

Practice : Pg 589 # 4-12

HW: Pg 590 # 15, 17, 18, 19
23, 24, 30