

## Skills Check-up...Do I really understand??

1. State any restrictions on the following radicals:

(a)  $\sqrt{2x-5}$   
 odd Index None,  $x \in \mathbb{R}$   
 $3(\sqrt[3]{8 \times 3})$   
 $x \leq \frac{3}{5}$

(b)  $\sqrt[4]{3-5x}$   
 $3-5x \geq 0$   
 $-5x \geq -3$   
 $x \leq \frac{3}{5}$

2. Simplify each of the following radicals:

(a)  $-3\sqrt{48}$   
 $= -3(4\sqrt{3})$   
 $= -12\sqrt{3}$

(b)  $3\sqrt[3]{24}$   
 $= 3(2\sqrt[3]{3})$   
 $= 6\sqrt[3]{3}$

(c)  $3\sqrt{27x^5y^{12}}$   
 $= 3(\sqrt{9(3)x^4x^1y^{12}})$   
 $= 9x^2y^6\sqrt{3x}$

(d)  $4w^4\sqrt[4]{32w^{15}y^9z^3}$   
 $= 4w^4\sqrt[4]{(2^5w^4y^8z^3) \cdot 2w}$   
 $= 4w^4(2w^1y^2z^{\frac{3}{4}})$   
 $= 8w^5y^2z^{\frac{3}{4}}$

3. Express each of the following as an ENTIRE radical:

(a)  $-5\sqrt{8}$   
 $= -\sqrt{5^2 \cdot 8}$   
 $= -\sqrt{200}$

(b)  $3\sqrt[3]{2}$   
 $= \sqrt[3]{3^3 \cdot 2}$   
 $= \sqrt[3]{54}$

(c)  $2a^5b\sqrt{6a}$   
 $= \sqrt{(2a^5b)^2 \cdot 6a}$   
 $= \sqrt{24a^{11}b^2}$

• Adding and Subtracting Radical Expressions

- Simplify and combine LIKE RADICALS

$$\begin{array}{r} 3\sqrt{5} + 7\sqrt{5} - 4 \\ 10\sqrt{5} - 4 \end{array}$$

$$\begin{aligned} 5\sqrt{8} - 4\sqrt{12} - \sqrt{300} + \sqrt{18} \\ = 10\sqrt{2} - 8\sqrt{3} - 10\sqrt{3} + 3\sqrt{2} \\ = 13\sqrt{2} - 18\sqrt{3} \end{aligned}$$

$$\begin{aligned} 2\sqrt{50x^5} - 6x^2\sqrt{98x} + 5\sqrt{48x} \\ = 2\sqrt{25(2)x^4x} - 6x^2\sqrt{49(2)x} + 5\sqrt{16(3)x} \\ = 10x^2\sqrt{2x} - 42x^2\sqrt{2x} + 20\sqrt{3x} \\ = -32x^2\sqrt{2x} + 20\sqrt{3x} \end{aligned}$$

$$\begin{aligned} 7 + 2\sqrt[3]{16w^9} - 5w^2\sqrt[3]{54w^3} \\ 7 + 2\sqrt[3]{8(2)w^9} - 5w^2\sqrt[3]{27(2)w^3} \\ 7 + 4w^3\sqrt[3]{2} - 15w^2\sqrt[3]{2} \\ = 7 - 11w^3\sqrt[3]{2} \end{aligned}$$

$$\begin{aligned} &= 3 + 2\sqrt{7} \\ &= 5\sqrt{7} \end{aligned}$$

Practice Problems:

Textbook:

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# 2, 3, 4, 8, 9, 10, 12, 13, 15, 18

✓ ✓ ✓

$$10\sqrt{3} - 5x\sqrt{3}$$

$$(10 - 5x)\sqrt{3}$$

$$\underline{5(2 - x)\sqrt{3}}$$

Bonus Problem:

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