7.4

Evaluate $2x + 3x$ when $x = \sqrt{7}$

$2\sqrt{7} + 3\sqrt{7} = 5\sqrt{7}$

$2x + 3x = 5x$

$x = \sqrt{7} \Rightarrow$

$5\sqrt{7}$

$5\sqrt{15} + 2\sqrt{15} = 7\sqrt{15}$

$6\sqrt{10} - 3\sqrt[3]{10} = 6\sqrt{10} - 3\sqrt[3]{10}$

Need same index, same radicand.

Apples & oranges.

$\sqrt{50} + \sqrt{18}$

$= \sqrt{25\cdot 2} + \sqrt{9\cdot 2}$

$= \sqrt{25}\sqrt{2} + \sqrt{9}\sqrt{2}$

$= 5\sqrt{2} + 3\sqrt{2} = 8\sqrt{2}$

$2 \underline{|50}$, $5 \underline{|25}$, 5

$2 \underline{|18}$, $3 \underline{|9}$, 3

$\sqrt[2]{5^2\cdot 2} + \sqrt[2]{3^2\cdot 2}$

$= 5\sqrt{2} + 3\sqrt{2}$

$\sqrt{27} = \sqrt[2]{3^3} = \sqrt{3^{2+1}} = \sqrt{3^2\cdot 3^1}$

when powers aren't perfect.

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

$\sqrt[3]{24} - 4\sqrt[3]{192}$

$\sqrt[3]{8\cdot 3} - 4\sqrt[3]{2^6\cdot 3}$

$\sqrt[3]{8}\sqrt[3]{3} - 4\cdot 2^2\sqrt[3]{3}$

$2\sqrt[3]{3} - 16\sqrt[3]{3} = -14\sqrt[3]{3}$

$2 \underline{|192}$, $2 \underline{|96}$, $2 \underline{|48}$, $2 \underline{|24}$, $2 \underline{|12}$, $2 \underline{|6}$, 3

$2^6\cdot 3$

$\sqrt[3]{2^6} =$

$(2^6)^{\frac{1}{3}} = 2^{\frac{6}{3}}$

$= 2^2$

$2^3\sqrt{3}$ $\underline{\text{NOT}}$

$$\sqrt{20x} - 6\sqrt{16x} + \sqrt{45x}$$
$$= \sqrt{4\cdot 5x} - 6\cdot 4\sqrt{x} + \sqrt{9\cdot 5x}$$
$$= \sqrt{4}\sqrt{5x} - 24\sqrt{x} + \sqrt{9}\sqrt{5x}$$
$$= 2\sqrt{5x} - 24\sqrt{x} + 3\sqrt{5x}$$
$$= 5\sqrt{5x} - 24\sqrt{x}$$

$$\sqrt[3]{8y^5} + \sqrt[3]{27y^5}$$
$$2\sqrt[3]{y^5} + 3\sqrt[3]{y^5}$$
$$= 2y\sqrt[3]{y^2} + 3y\sqrt[3]{y^2}$$
$$= 5y\sqrt[3]{y^2}$$

$$\frac{5}{3} = 1 + \frac{2}{3}$$
$$y^5 = y^{3+2} = y^3y^2$$
$$\sqrt[3]{y^3\cdot y^2}$$
$$= \sqrt[3]{y^3}\sqrt[3]{y^2}$$
$$= y\sqrt[3]{y^2}$$

$$\sqrt[3]{y^{512}}$$
$$= \sqrt[3]{y^{510+2}}$$
$$= \sqrt[3]{y^{510}}\sqrt[3]{y^2}$$
$$y^{170}\sqrt[3]{y^2}$$

$$\frac{512}{3} = 170 + \frac{2}{3}$$
$$\frac{512}{3} = 170.\overline{6}$$
$$(170)(3) = 510$$
$$512 - 510 = 2$$

$$\frac{512}{3} = 170\text{~ stuff}$$
$$(170)(3) = 510$$
$$512 - 510 = 2$$
$$y^{510+2}$$

$$\sqrt[4]{y^{17}} = \sqrt[4]{y^{16+1}} = \sqrt[4]{y^{16}y^{1}}$$

$$= y^{4}\sqrt[4]{y}$$

$$\sqrt[5]{x^{377}} = \sqrt[5]{x^{375+2}} = x^{\frac{375}{5}}\sqrt[5]{x^{2}}$$

$$= x^{75}\sqrt[5]{x^{2}}$$

Nov 10-11:43 AM

$$\sqrt{2}\,(6+\sqrt{10})$$

$$6\sqrt{2}+\sqrt{2}\sqrt{10}$$

$$=6\sqrt{2}+\sqrt{20}$$

$$=\boxed{6\sqrt{2}+2\sqrt{5}}$$

$$\sqrt{5\cdot 4}=\sqrt{20}$$

$$2\sqrt{5}$$

$$(\sqrt{3}-\sqrt{5})(\sqrt{2}+7)$$

$$\sqrt{3}\sqrt{2}+7\sqrt{3}-\sqrt{5}\sqrt{2}-7\sqrt{5}$$

$$\sqrt{6}+7\sqrt{3}-\sqrt{10}-7\sqrt{5}$$

Sidebar

$$\sqrt{3}\sqrt{2}+\sqrt{5}\sqrt{2}=(\sqrt{3}+\sqrt{5})\sqrt{2},$$

but nothing gained, unless there's a reason for it.

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

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

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

$$= \sqrt{5}^2 - \sqrt{2}^2 = 5 - 2 = 3 \; !$$

$$(\sqrt{3}+\sqrt{7})(\sqrt{3}-\sqrt{7}) = \sqrt{3}^2 - \sqrt{7}^2 = 3 - 7 = -4$$

$$(\sqrt{5}+\sqrt{2})^2 = 5 + 2\sqrt{5}\sqrt{2} + 2 = 7 + 2\sqrt{10}$$

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

$$(\sqrt{5}+\sqrt{2})(\sqrt{5}+\sqrt{2}) = \sqrt{5}^2 + \sqrt{5}\sqrt{2} + \sqrt{2}\sqrt{5} + \sqrt{2}^2$$

$$= 5 + 2\sqrt{10} + 2$$

$$= 7 + 2\sqrt{10}$$

$$(\sqrt{5})^2 = 5$$

7.4 #s 1-76, every 4th one: 1, 5, 9, ..., stop right by #76 Monday.

$$\sqrt[3]{\frac{5x}{27}} + 4\sqrt[3]{5x}$$

$$= \frac{\sqrt[3]{5x}}{\sqrt[3]{27}} + 4\sqrt[3]{5x}$$

$$= \frac{\sqrt[3]{5x}}{3} + \frac{4\sqrt[3]{5x}}{1} \cdot \frac{3}{3}$$

$$= \frac{\sqrt[3]{5x} + 12\sqrt[3]{5x}}{3} = \frac{13\sqrt[3]{5x}}{3}$$

Carlie's great. ~~hates~~ ~~me~~.