#13, 9*d, 10 c, ②①*, 8d, 10d, 12

#13, $d = \sqrt[3]{25n^2}$

Mercury

$d = \sqrt[3]{25(88)^2}$

$d = \sqrt[3]{193\,600}$

Mars

$d = \sqrt[3]{25(704)^2}$

$d = \sqrt[3]{12\,390\,400}$

Diff: $= \sqrt[3]{12\,390\,400} - \sqrt[3]{193\,600}$

$= \sqrt[3]{4096 \cdot 3025} - \sqrt[3]{64 \cdot 3025}$

$= 16\sqrt[3]{3025} - 4\sqrt[3]{3025}$

$= 12\sqrt[3]{3025}$

10d) $\dfrac{w}{5}\sqrt[3]{-64} + \dfrac{\sqrt[3]{512w^3}}{5} - \dfrac{2}{5}\sqrt{50w} - 4\sqrt{2w}$

$= \dfrac{w}{5}(-4) + \dfrac{8w}{5} - \dfrac{2}{5}\left(5\sqrt{2w}\right) - 4\left(\sqrt{2w}\right)$

$= -\dfrac{4w}{5} + \dfrac{8w}{5} - 2\sqrt{2w} - 4\sqrt{2w}$

$= \dfrac{4w}{5} - 6\sqrt{2w}$

OR

$= \dfrac{4}{5}w - 6\sqrt{2w}$

$$10q - 4\sqrt[3]{625r} + \sqrt[3]{40r^4}$$

$$= -4\sqrt[3]{125 \cdot 5r} + \sqrt[3]{8 \cdot 5r^3 r^1}$$

$$= -20\sqrt[3]{5r} + 2r\sqrt[3]{5r}$$

$$= (-20 + 2r)\sqrt[3]{5r}$$
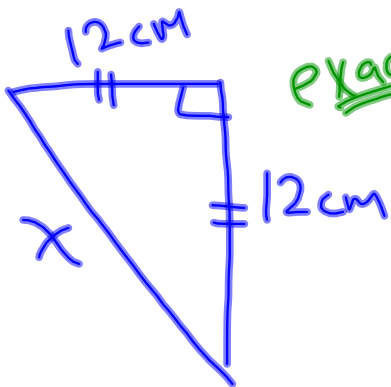
$$= 2(-10 + r)\sqrt[3]{5r}$$

$$= -2(10 - r)\sqrt[3]{5r}$$

$$= 2(r - 10)\sqrt[3]{5r}$$

$$= -2(-r + 10)\sqrt[3]{5r}$$

All Equal !!!

12. 12cm

exact!!

$12^2 + 12^2 = x^2$

$\sqrt{288} = \sqrt{x^2}$

$12\sqrt{2} = x$

x

= 12cm

Simplify:

$$3\sqrt{20} - 5a\sqrt[3]{40a^7} - \sqrt{125} + a^3\sqrt[3]{320a}$$

$$= 3(2\sqrt{5}) - 5a\sqrt[3]{8 \cdot 5a^6a} - 5\sqrt{5} + a^3\sqrt[3]{64 \cdot 5a}$$

$$= 6\sqrt{5} - 10a^3\sqrt[3]{5a} - 5\sqrt{5} + 4a^3\sqrt[3]{5a}$$

$$= \sqrt{5} - 6a^3\sqrt[3]{5a}$$

- ## Multiplying Radicals

When multiplying radicals, multiply the coefficients and multiply the radicands. You can only multiply radicals if they have the same index.

In general, $(m\sqrt[k]{a})(n\sqrt[k]{b}) = mn\sqrt[k]{ab}$, where k is a natural number, and m, n, a, and b are real numbers. If k is even, then $a \geq 0$ and $b \geq 0$.

Let's look at some examples...

$2\sqrt{14}\left(-3\sqrt{2}\right)$ 【2】 student $3\sqrt{8}\left(5\sqrt{48}\right)$ 【3】

$-6\sqrt{28}$

$= 15\sqrt{384}$

$= -12\sqrt{7}$

$= 15\left(8\sqrt{6}\right)$ 3

$= 120\sqrt{6}$

$\left(\sqrt{48}\right)\left(2\sqrt{48}\right)$

Simplify first:

$2(48)$

$= 3\sqrt{8}\left(5\sqrt{48}\right)$

$= 96$

$= \left(6\sqrt{2}\right)\left(20\sqrt{3}\right)$

$= 120\sqrt{6}$

$$3w\sqrt[3]{2w^7} \cdot 5\sqrt[3]{12w^5}$$

$$15w^3\sqrt[3]{24w^{12}}$$

$$=30w^5\sqrt[3]{3}$$

$$5\sqrt{2}\left(5-2\sqrt{18}\right)$$

$$=25\sqrt{2}-10\sqrt{36}$$

$$=25\sqrt{2}-60$$

$$\left(3\sqrt{5}+2\sqrt{12}\right)\left(\sqrt{15}-4\sqrt{2}\right)$$

$$=3\sqrt{75}-12\sqrt{10}+2\sqrt{180}-8\sqrt{24}$$

$$=15\sqrt{3}-12\sqrt{10}+12\sqrt{5}-16\sqrt{6}$$

Homework:
Am I Ready for Multiplication of Radicals??

Section 5.2 Warm-Up

1. Multiply.

   a) $(2s^2t)(3s^2t)$ b) $(-3x)(2xp)$

   c) $2b(3b-1)$ d) $-(4x^2-3y^2)$

   e) $(2n-3)(n+1)$ f) $(3x-4y)(x-2y)$

2. Divide.

   a) $\dfrac{-6x^2y}{3x}$ b) $\dfrac{\left(11a^3-22a^2-44a^2b\right)}{\left(11a^2\right)}$

   c) $\dfrac{4t^2-12t}{-2t}$ d) $\dfrac{(3x-5)(3x+5)}{3x+5}$

3. Express each entire radical as an equivalent mixed radical in simplest form.

   a) $\sqrt{20x^4y^8}$ b) $\sqrt{9xy^4}$

   c) $\sqrt{6m^5n}$ d) $\sqrt[3]{16t^4}$

4. Express each mixed radical as an equivalent entire radical.

   a) $3p\sqrt{2p}$ b) $4x^2\sqrt{3x}$

   c) $x\sqrt[3]{x}$ d) $-2y\sqrt[3]{5}$

5. Simplify. Assume that all variables represent positive values.

   a) $4\sqrt{p}-3\sqrt{p}+\sqrt{p}$

   b) $x\sqrt{4}-x\sqrt{3}+x$

   c) $9\sqrt{ab}+3\sqrt{ab}-\sqrt{49ab}$

   d) $\sqrt{11y}-\sqrt{44y}$

   e) $\left(30x+\sqrt{80}\right)-\left(20x-\sqrt{20}\right)$

   f) $\left(8+\sqrt{18x^2}\right)+\left(2-\sqrt{8x^2}\right)-\left(5-\sqrt{50x^2}\right)$

Solutions...

Section 5.2

1. a) $6s^4t^2$ b) $-6x^2p$ c) $6b^2-2b$
   d) $-4x^2+3y^2$ e) $2n^2-n-3$ f) $3x^2-10xy+8y^2$
2. a) $-2xy$ b) $a-2-4b$ c) $-2t+6$ d) $3x-5$
3. a) $2x^2y^4\sqrt{5}$ b) $3y^2\sqrt{x}$ c) $m^2\sqrt{6mn}$ d) $2t\sqrt[3]{2t}$
4. a) $\sqrt{18p^3}$ b) $\sqrt{48x^5}$ c) $\sqrt[3]{x^4}$ d) $-\sqrt[3]{40y^3}$
5. a) $2\sqrt{p}$ b) $3x-x\sqrt{3}$ c) $5\sqrt{ab}$ d) $-\sqrt{11y}$
   e) $10x+6\sqrt{5}$ f) $6\sqrt{2}x+5$

Attachments

Mathematical Pathways Description.docx

Pre-Calculus 110 - Fall 2012.doc