

Math 1005 sec 2
Radical Matching

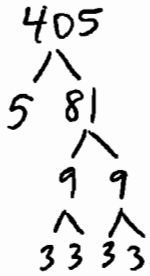
1 $\sqrt[4]{405}$	2 $\sqrt[3]{18^3\sqrt{3}}$	3 $\sqrt[4]{625} - \sqrt[6]{64}$	4 $\sqrt[9]{x^{10}y^{14}}$
5 $\frac{\sqrt[5]{729x^6}}{\sqrt[5]{3x}}$	6 $\frac{5}{\sqrt{2}+1}$	7 $\sqrt[5]{(-2)^5}$	8 $4^3\sqrt{16} + 5^3\sqrt{2}$
9 $\sqrt[4]{4375}$	10 $\sqrt[4]{\left(-\frac{1}{7}\right)^4}$	11 $\sqrt[5]{972} + \sqrt[5]{128}$	12 $\sqrt{2x^3}\sqrt{2x}$
13 $\sqrt[9]{64x^6} * \sqrt[9]{8x^{12}y^{11}}$	14 $\sqrt[3]{378}$	15 $\sqrt[3]{250xy^3} - \sqrt[3]{686xy^3}$	16 $\frac{-7}{3-\sqrt{5}}$

Matches: 1A 2D 3O 4K 5F 6G 7B 8I 9J 10C 11P 12E 13L 14M 15N 16H

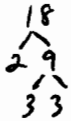
A $3^4\sqrt{5}$	B -2	C $\frac{1}{7}$	D $3^3\sqrt{2}$
E $2x^2$	F $3x$	G $5(\sqrt{2}-1)$	H $\frac{-21-7\sqrt{5}}{4}$
I $13^3\sqrt{2}$	J $5^4\sqrt{7}$	K $xy\sqrt[9]{xy^5}$	L $2x^2y^9\sqrt[9]{y^2}$
M $3^3\sqrt{14}$	N $-2y^3\sqrt{2x}$	O 3	P $5^5\sqrt{4}$

①

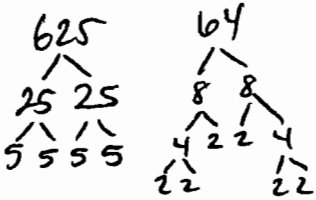
$$\#1) \sqrt[4]{405} = \sqrt[4]{3^4 \cdot 5} = \sqrt[4]{3^4} \cdot \sqrt[4]{5} = \boxed{3\sqrt[4]{5}}$$



$$\#2) \sqrt[3]{18} \cdot \sqrt[3]{3} = \sqrt[3]{18 \cdot 3} = \sqrt[3]{2 \cdot 3 \cdot 3 \cdot 3} = \sqrt[3]{2 \cdot 3^3} = \sqrt[3]{2} \cdot \sqrt[3]{3^3} = (\sqrt[3]{2})(3) = \boxed{3\sqrt[3]{2}}$$



$$\#3) \sqrt[4]{625} - \sqrt[6]{64} = \sqrt[4]{5^4} - \sqrt[6]{2^6} = 5 - 2 = \boxed{3}$$

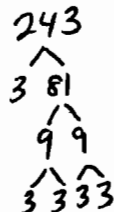


$$\#4) \sqrt[9]{x^{10}y^{14}} = \sqrt[9]{x^9x \cdot y^9y^5} = \sqrt[9]{x^9y^9xy^5} = \sqrt[9]{x^9} \sqrt[9]{y^9} \sqrt[9]{xy^5} = \boxed{xy\sqrt[9]{xy^5}}$$

$$x^{10} = x^{9+1} = x^9x^1$$

$$y^{14} = y^{9+5} = y^9y^5$$

$$\#5) \frac{\sqrt[5]{729x^6}}{\sqrt[5]{3x}} = \sqrt[5]{\frac{729x^6}{3x}} = \sqrt[5]{243x^5} = \sqrt[5]{3^5x^5} = \sqrt[5]{3^5} \cdot \sqrt[5]{x^5} = \boxed{3x}$$

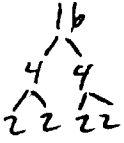


$$\#6) \frac{5}{\sqrt{2}+1} \cdot \frac{(\sqrt{2}-1)}{(\sqrt{2}-1)} = \frac{5(\sqrt{2}-1)}{(\sqrt{2})^2-(1)^2} = \frac{5(\sqrt{2}-1)}{2-1} = \frac{5(\sqrt{2}-1)}{1} = \boxed{\begin{array}{c} 5(\sqrt{2}-1) \\ \text{OR} \\ 5\sqrt{2}-5 \end{array}}$$

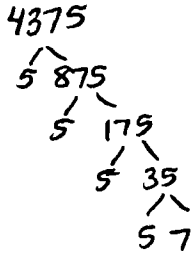
②

#7) $\sqrt[5]{(-2)^5} = \boxed{-2}$

#8) $4\sqrt[3]{16} + 5\sqrt[3]{2} = 4\sqrt[3]{2^3 \cdot 2} + 5\sqrt[3]{2} = 4\sqrt[3]{2^3} \cdot \sqrt[3]{2} + 5\sqrt[3]{2}$
 $= 4 \cdot 2 \cdot \sqrt[3]{2} + 5\sqrt[3]{2}$
 $= 8\sqrt[3]{2} + 5\sqrt[3]{2} = \boxed{13\sqrt[3]{2}}$

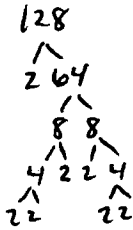
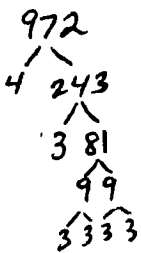


#9) $\sqrt[4]{4375} = \sqrt[4]{5^4 \cdot 7} = \sqrt[4]{5^4} \cdot \sqrt[4]{7} = \boxed{5\sqrt[4]{7}}$



#10) $\sqrt[4]{\left(\frac{1}{7}\right)^4} = \left|\frac{1}{7}\right| = \boxed{\frac{1}{7}}$

#11) $\sqrt[5]{972} + \sqrt[5]{128} = \sqrt[5]{3^5 \cdot 4} + \sqrt[5]{2^5 \cdot 2} = \sqrt[5]{3^5} \cdot \sqrt[5]{4} + \sqrt[5]{2^5} \sqrt[5]{4}$
 $= 3\sqrt[5]{4} + 2\sqrt[5]{4}$
 $= \boxed{5\sqrt[5]{4}}$

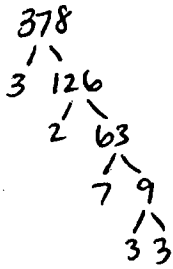


#12) $\sqrt{2x^3} \cdot \sqrt{2x} = \sqrt{2x^3 \cdot 2x} = \sqrt{2^2 x^4} = \sqrt{2^2 \cdot x^2 \cdot x^2} = \sqrt{2^2} \cdot \sqrt{x^2} \cdot \sqrt{x^2} = 2 \cdot x \cdot x = \boxed{2x^2}$

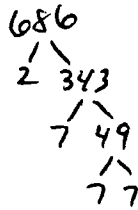
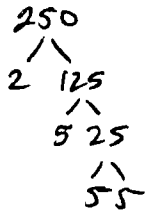
#13) $\sqrt[9]{64x^6} \cdot \sqrt[9]{8x^{12}y^{11}} = \sqrt[9]{2^6 x^6} \cdot \sqrt[9]{2^3 x^{12} y^{11}} = \sqrt[9]{2^6 x^6 \cdot 2^3 x^{12} y^{11}} = \sqrt[9]{2^9 x^{18} y^{11}}$
 $= \sqrt[9]{2^9 x^9 \cdot x^9 \cdot y^9 \cdot y^2}$
 $= \sqrt[9]{2^9} \cdot \sqrt[9]{x^9} \cdot \sqrt[9]{x^9} \cdot \sqrt[9]{y^9} \cdot \sqrt[9]{y^2}$
 $= 2 \cdot x \cdot x \cdot y \cdot \sqrt[9]{y^2}$
 $= \boxed{2x^2 y \sqrt[9]{y^2}}$

(3)

$$\#14) \sqrt[3]{378} = \sqrt[3]{3^3 \cdot 2 \cdot 7} = \sqrt[3]{3^3} \cdot \sqrt[3]{2 \cdot 7} = \boxed{3\sqrt[3]{14}}$$



$$\#15) \sqrt[3]{250xy^3} - \sqrt[3]{686xy^3} = \sqrt[3]{5^3 \cdot 2 \cdot xy^3} - \sqrt[3]{7^3 \cdot 2 \cdot xy^3}$$



$$\begin{aligned} &= \sqrt[3]{5^3 y^3 \cdot 2x} - \sqrt[3]{7^3 y^3 \cdot 2x} \\ &= \sqrt[3]{5^3} \sqrt[3]{y^3} \sqrt[3]{2x} - \sqrt[3]{7^3} \sqrt[3]{y^3} \sqrt[3]{2x} \\ &= 5y \sqrt[3]{2x} - 7y \sqrt[3]{2x} \\ &= \boxed{-2y \sqrt[3]{2x}} \end{aligned}$$

$$\#16) \frac{-7}{(3-\sqrt{5})} \cdot \frac{(3+\sqrt{5})}{(3+\sqrt{5})} = \frac{-7(3+\sqrt{5})}{(3^2 - (\sqrt{5})^2)} = \frac{-7(3+\sqrt{5})}{9-5}$$

$$= \frac{-7(3+\sqrt{5})}{4}$$

$$= \boxed{\frac{-21-7\sqrt{5}}{4}}$$