

2-22 Review

1) $6x^3 + 2x^3 = 8x^3$

2) $4x^2 - x^2 = 3x^2$

3) $6x^3 \cdot 2x^3 = 12x^6$
 $(6x^3)(2x^3)$

4) $6x^2 \cdot 2x^3 = 12x^5$

5) $6x^2 \cdot 2y^3 = 12x^2y^3$

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6) $\frac{6x^3}{2x^2} = 3x$

7) $\frac{6x^3}{2x^9} = 3x^{-6} = \frac{3}{x^6}$

~~xxxxxx~~
~~xxxxxx~~

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8) $\frac{4x^3y^2z^{-5}}{8y^2} = \frac{1x^3z^{-5}}{2z^5}$

9) $\sqrt{4} = 2$ $4^{\frac{1}{2}} = 2$

10) $8^{\frac{2}{3}} = \sqrt[3]{8^2} = 2^2 = 4$
 $2 \times 2 \times 2$

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$4\sqrt{16} = 4$ $16^{\frac{1}{4}} = 16^{\frac{1}{2}} = \sqrt{16} = 4$
 $2 \times 2 \times 2 \times 2$

12) $\sqrt[6]{x^6} = x^{\frac{6}{6}} = x^1 = x$

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$(x^3)^4 = x^{12} = x^{12}$

 $(x^{\frac{1}{2}})^4 \sqrt{x^6} = x^2 \cdot x^3 = x^5$ $\sqrt{x^6} = x^{\frac{6}{2}} = x^3$

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$(x^{\frac{1}{3}}y)^3 \sqrt{xy} = x^1y^3 \sqrt{xy} = \sqrt{x^2y^4} = x^{\frac{2}{2}}y^{\frac{4}{2}} = xy^2$
 $\frac{1}{3} \cdot 3 = 1$

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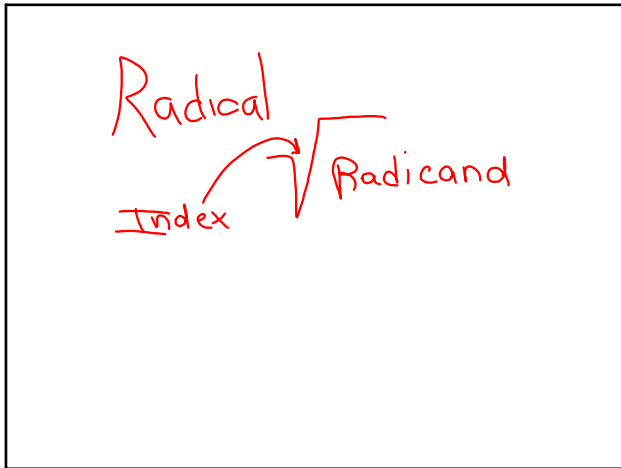
$$\begin{aligned} ((x^3)^4)^2 &= x^4 \\ (5x^3)^3 &= 5^3 x^6 = 125x^6 \\ (3x^2y^3)^3 &= 3^3 x^6 y^9 = \frac{27x^6}{y^9} \\ (4x^2y^3z^4)^2 &= 16x^4y^6z^8 \end{aligned}$$

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$$\frac{(x^{\frac{1}{4}})^8}{\sqrt[3]{x^3}} = \frac{x^2}{x^{\frac{3}{3}}} = \frac{x^2}{x} = x$$

$\frac{1}{4} \cdot \frac{8}{1}$

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Radicals

$$\begin{aligned} \sqrt{3} + 4\sqrt{3} &= 5\sqrt{3} \\ 6\sqrt{2} - 4\sqrt{2} &= 2\sqrt{2} \end{aligned}$$

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$$\frac{\sqrt{8}}{2\sqrt{2}} + 4\sqrt{2} = 6\sqrt{2}$$

$\frac{\sqrt{8}}{2\sqrt{2}}$

Two tree diagrams for the prime factorization of 8. The first tree shows 8 being divided by 2 to get 4, which is then divided by 2 to get 2. The second tree shows 8 being divided by 2 to get 4, which is then divided by 2 to get 2. Both trees result in the prime factorization $2 \cdot 2 \cdot 2$.

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$$\begin{aligned} 7\sqrt{2} + \sqrt{8} \\ 7\sqrt{2} + 2\sqrt{2} &= 9\sqrt{2} \end{aligned}$$

$\sqrt{8} = \sqrt{4 \cdot 2} = 2\sqrt{2}$

A tree diagram for the prime factorization of 8, showing 8 divided by 2 to get 4, and 4 divided by 2 to get 2, resulting in $2 \cdot 2 \cdot 2$.

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$\sqrt{20}$
 $5 \cdot 4$
 $2\sqrt{5}$

$\sqrt{20}$
 $2 \cdot 10$
 $2 \cdot 5$

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$\sqrt{72}$
 $9 \cdot 8$
 $3 \cdot 2\sqrt{2}$
 $6\sqrt{2}$

$\sqrt{72}$
 $2 \cdot 36$
 $6\sqrt{2}$

72
 $2 \cdot 36$
 $2 \cdot 9$
 $3 \cdot 3$

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$\sqrt{49x^3y^7}$
 $7x^2y^3 \sqrt{xy}$

$7 \cdot 7 \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y$

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$\sqrt{12x^4y^5}$
 $2x^2y^2\sqrt{3y}$

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Find the Perimeter

$4\sqrt{8}$

$5\sqrt{12} + 6\sqrt{20}$

$4 \cdot \sqrt{8} = 4 \cdot 2\sqrt{2} = 8\sqrt{2}$

$5 \cdot \sqrt{12} = 5 \cdot 2\sqrt{3} = 10\sqrt{3}$

$6 \cdot \sqrt{20} = 6 \cdot 2\sqrt{5} = 12\sqrt{5}$

$10\sqrt{3} + 12\sqrt{5}$

$8\sqrt{2}$

$10\sqrt{3} + 12\sqrt{5}$

$16\sqrt{2} + 20\sqrt{3} + 24\sqrt{5}$

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$(x^2)^3 = x^6$

$(x^{\frac{1}{2}})^4 = x^2$

$(3x^2)^3 = 3^3 x^6 = 27x^6$

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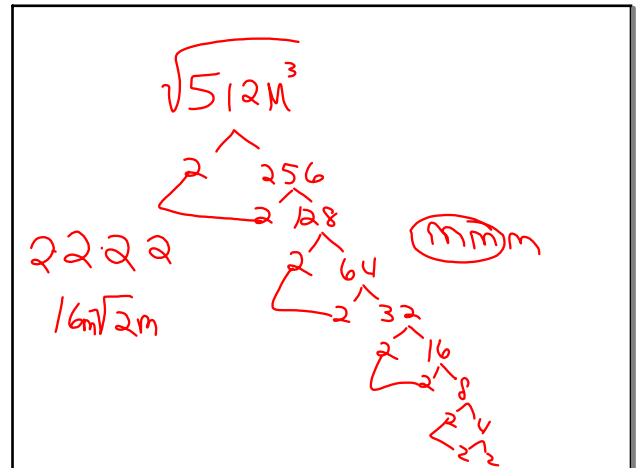
$$5x^2 \times w^3 \times w^4$$

Degree 9

$$5x^2y + 6x^3y^4 \rightarrow \text{Degree is 7}$$

Degree = 3 Degree 7

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