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Roots

$\sqrt[3]{54} + \sqrt[3]{128} = 3\sqrt[3]{2} + 4\sqrt[3]{2} = 7\sqrt[3]{2}$

$54 = 27 \cdot 2$, $128 = 64 \cdot 2$

$\sqrt[2]{25} = 5$

index → $\sqrt[3]{-8} = -2$

$\sqrt[2]{-49} = 7i$

$\sqrt[4]{-81}$ = no value

$\sqrt{-1}$

$\sqrt{24} = \sqrt{6 \cdot 4} = 2\sqrt{6}$

$\sqrt[3]{40} = \sqrt[3]{8 \cdot 5} = 2\sqrt[3]{5}$

$\sqrt[4]{162} = \sqrt[4]{81 \cdot 2} = 3\sqrt[4]{2}$, $81 = 3^4$

$\sqrt[6]{3645} = \sqrt[6]{729 \cdot 5}$

$729 \cdot 5 = 3\sqrt[6]{5}$

$2^6 = 64$

$3^6 = 729$

~~$4^6 = 4096$~~

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$\sqrt{a^2} = |a^1|$

$\sqrt[2]{a^4} = a^2$

$a^2 \cdot a^2$

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

$y^3 \cdot y^3$

$\sqrt[5]{z^{20}} = z^4$

$\sqrt[3]{x^7 y^{11}} =$

$x^2 y^3 \sqrt{x^1 y^2}$

Add abs value when = Even Index − Even Power Inside root − Odd Power Outside root

$\sqrt[4]{a^8 b^{28} c^{100}} = a^2 |b^7 c^{25}|$

$\sqrt[6]{a^{36} b^{42} c^{24}} = a^6 b^7 c^{16} = a^6 c^{16} |b^7|$

$\sqrt{x^2+8x+16} = \sqrt{(x+4)(x+4)}$

$= \sqrt[2]{(x+4)^2} = |x+4|^1$

$\sqrt[3]{x^7} = \sqrt[3]{x^6 \cdot x^1}$

$= x^3 \sqrt[3]{x^1}$

$2\overline{)\,7}$ quotient 3, -6, remainder 1

$\sqrt[4]{x^1 y^6} \cdot \sqrt[4]{x^3 y^4} =$ (even, odd, even; even)

$= \sqrt[4]{x^4 y^{10}}$

$= x^1 y^2 \sqrt[4]{y^2}$ (even)

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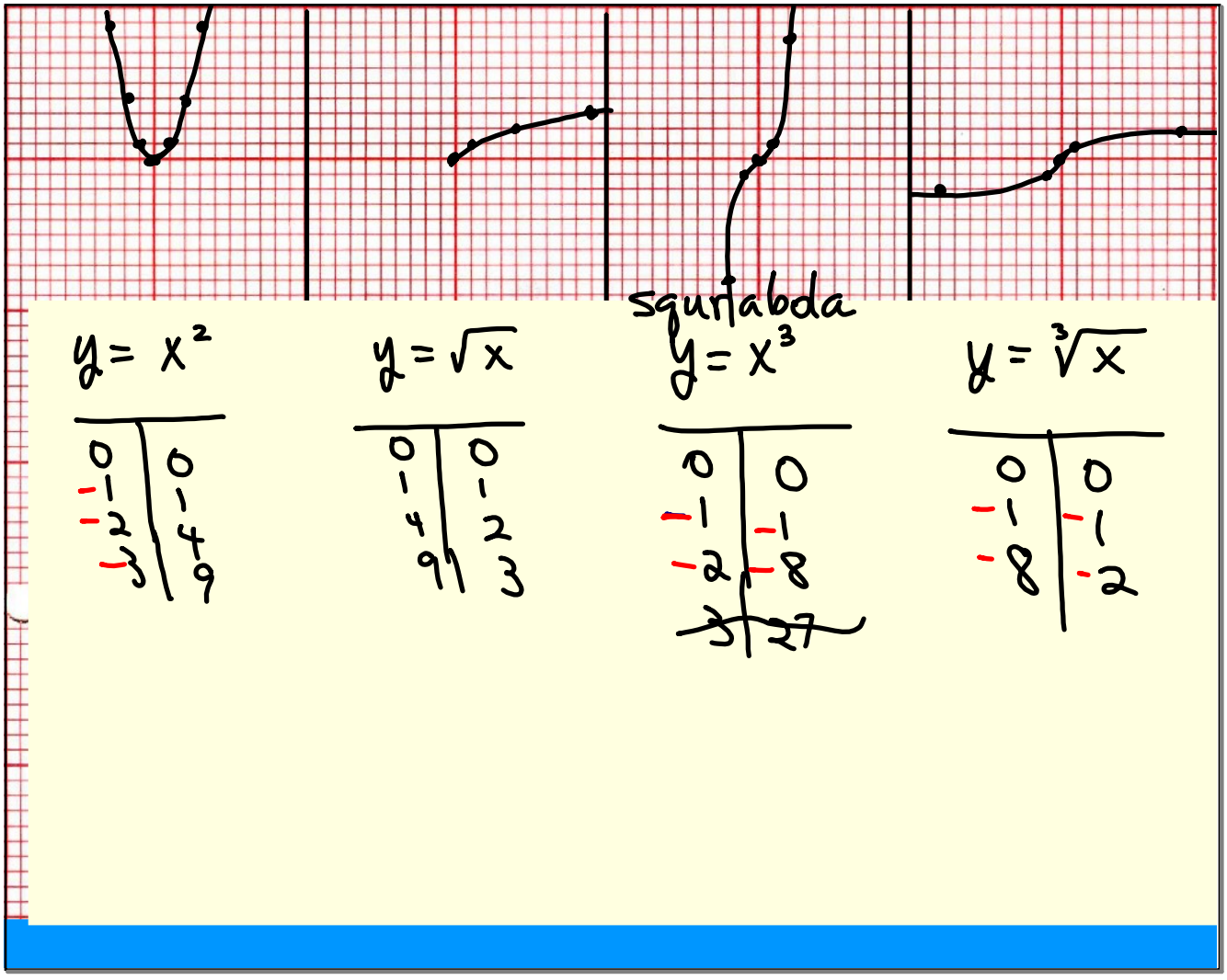

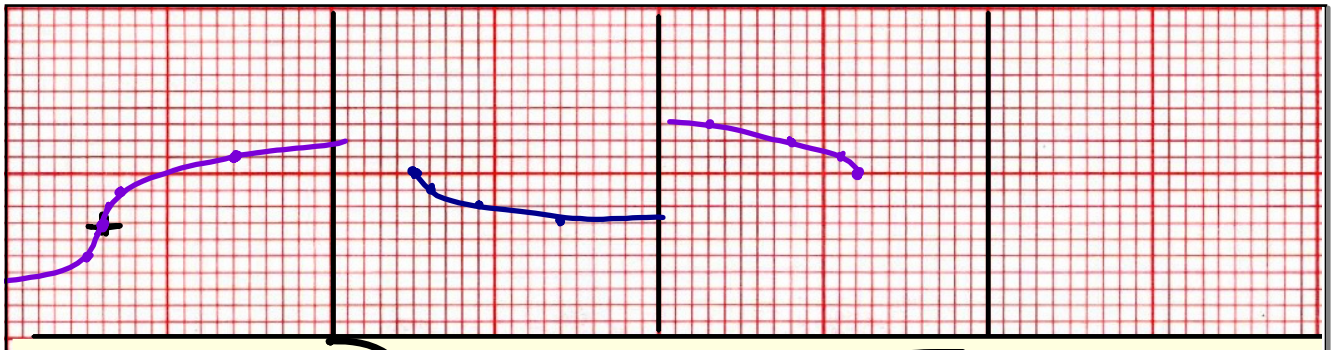

$y = 2\sqrt[3]{x+4} - 3$

0	0
1	2
8	4

left 4

down 3

$y = -\sqrt{x+5}$

0	0
1	-1
4	-2
9	-3

$y = \sqrt{2-x}$

↑ x can't be −, in order to determine horiz shift.

$y = \sqrt{-(x-2)}$ ← pull out − + make signs reverse.

0	0
-1	1
-4	2
-9	3

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