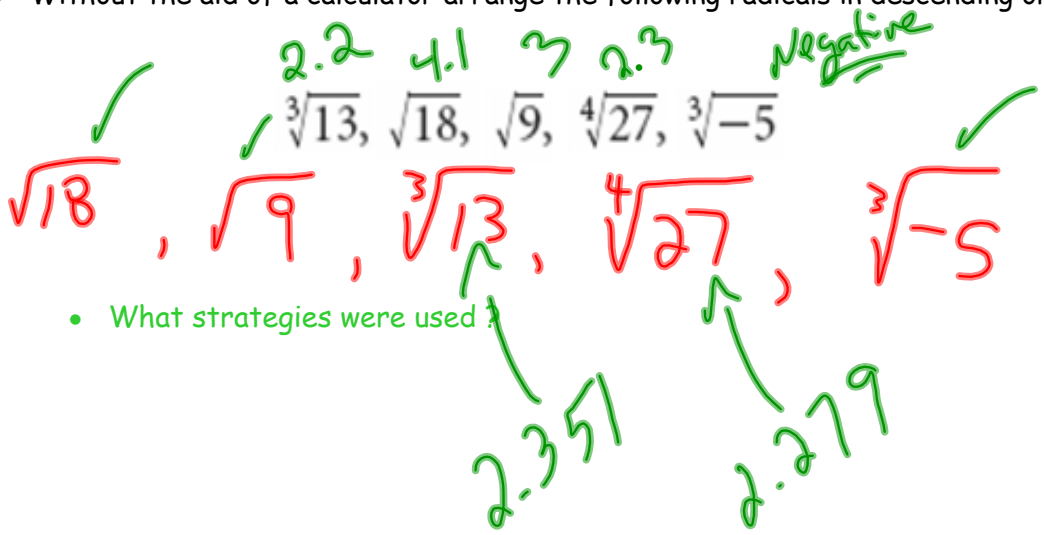
- Without the aid of a calculator arrange the following radicals in descending order:

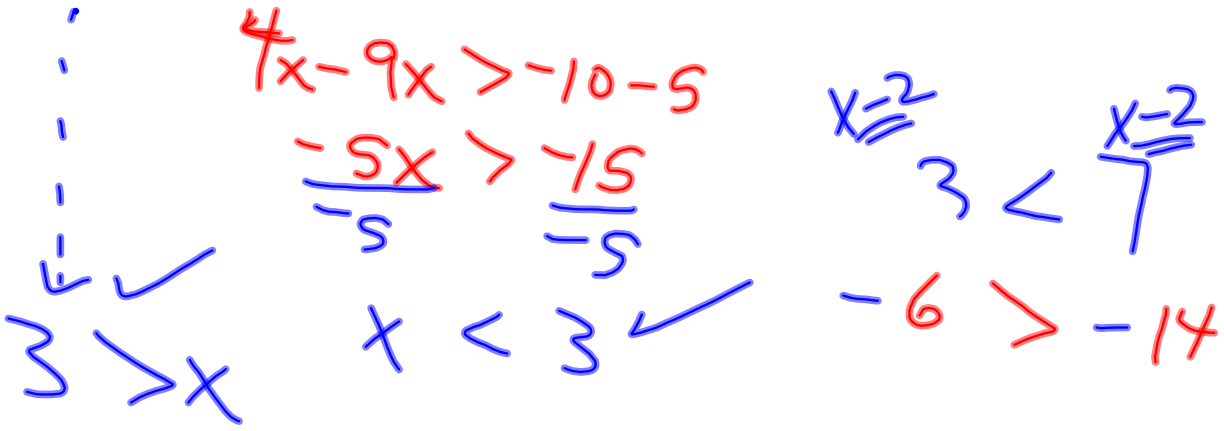



  - What strategies were used ?

Pre-requisite skill... .

Solve this inequation:

$$4x + 5 > 9x - 10$$



## Let's revisit restrictions...

State any restrictions on the following radicals:

$\sqrt{3x+5}$

$3x+5 \geq 0$

$3x \geq -5$

$x \geq -\frac{5}{3}$

$\sqrt[12]{5-3x}$

$5-3x \geq 0$

$-3x \geq -5$

$x \leq \frac{5}{3}$

odd Index

$\sqrt[5]{4-x}$

None

$\sqrt[6]{4x^8}$

$4x^8 \geq 0$

$x^8 \geq 0$

$x \in R$

$\sqrt{-9}$ $\sqrt[3]{-8} = -2$

$\sqrt[24]{(x)}$

- Simplifying Radicals

Required prior knowledge:

- Expressing radicals as exponents

$\sqrt{x} = x^{\frac{1}{2}}$ $\qquad \sqrt[3]{x} = x^{\frac{1}{3}}$

$\sqrt[5]{x^7} = (x^7)^{\frac{1}{5}} = x^{\frac{7}{5}}$ $\qquad m^{\frac{3}{4}} = \left(\sqrt[4]{m}\right)^3$

$8^{\frac{4}{3}} = \left(\sqrt[3]{8}\right)^4 = (2)^4 = 16$ $\qquad 9^{\frac{3}{2}} = \left(\sqrt{9}\right)^3 = 27$

$16^{\frac{1}{2}} = 4$ $\qquad 4^{-\frac{5}{2}} = \frac{1}{32}$

$\left(\frac{2}{5}\right)^2 = \frac{25}{4}$ $\qquad \frac{1}{4^{\frac{5}{2}}}$

$\left(\frac{5}{2}\right)^2 =$

$\frac{2^{-2}}{5^{-1}} = \frac{1}{5 \cdot 2^2} = \frac{1}{20}$

## Exponents and Exponentials:

Evaluate the following.:

$$-2^4+\left(\frac{1}{3}\right)^{-2}-64^{-\frac{2}{3}}+4w^0+(-3)^2+\frac{2^{-2}}{2^2 4}$$

$(3)^2$ $\quad -\frac{1}{64^{2/3}}$ $\quad 4(1)$

$$-16+9-\frac{1}{16}+4+9+\frac{1}{16}$$

$$=6$$

- Converting radicals between forms ( Mixed <--> Entire )

$9\sqrt{50}$

$9\sqrt{25 \cdot 2}$

$9(\sqrt{25} \cdot \sqrt{2})$

$9(5\sqrt{2})$

$45\sqrt{2}$

$\sqrt{18} = \sqrt{9 \times 2}$

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

$\sqrt{12} = 2\sqrt{3}$

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

$\sqrt{32} =$

$\sqrt{72}$

$2\sqrt[5]{96}$

$\sqrt[3]{40}$

Mixed → Entire

$3\sqrt{2} \longrightarrow \sqrt{3^2 \cdot 2} = \sqrt{18}$

$2\sqrt{5} \longrightarrow \sqrt{20}$

$2\sqrt[3]{5} \longrightarrow \sqrt[3]{40}$

$\sqrt{2^3 \cdot 5}$

$3\sqrt[4]{10} = \sqrt[4]{810}$

$-\sqrt{200}$

$-\sqrt{100 \cdot 2}$

$-10\sqrt{2}$

$5\sqrt{45}$

$5\sqrt{9 \times 5}$

$5(3\sqrt{5})$

$15\sqrt{5}$

$\sqrt[3]{56}$

$\sqrt[3]{8 \cdot 7}$

$2\sqrt[3]{7}$

$\sqrt[5]{64}$

$\sqrt[5]{32 \cdot 2}$

$2\sqrt[5]{2}$

$2^5 = 32$

4 64
9 81
16 100
25 121
36 144
49

1
1

8
27
64
125

Perfect cubes