2^{nd} - exercise:

1. $a = (4\sqrt{5}-2)(\sqrt{5}+1) - (\sqrt{5}-1)^2$

$= 20 + 4\sqrt{5} - 2\sqrt{5} - 2 - [5 - 2\sqrt{5} + 1]$

$= 18 + 2\sqrt{5} - 6 + 2\sqrt{5}$

$a = 12 + 4\sqrt{5}$.

Since $12 > 0$ and $4\sqrt{5} > 0$

then a is positive (sum of +ve no. is +ve)

but $\sqrt{5}$ is an irrational no.

$\therefore$ a is a positive irrational no. Choice $\boxed{b}$

2. • $\sqrt{7.\bar{1}} = \sqrt{7+\frac{1}{9}} = \sqrt{\frac{63+1}{9}} = \sqrt{\frac{64}{9}} = \boxed{\frac{8}{3}}$

• $\sqrt{18} = \boxed{3\sqrt{2}}$ irrational no.

• $\sqrt{8^2-4^2} = \sqrt{64-16} = \sqrt{48} = \sqrt{16\times 3} = \boxed{4\sqrt{3}}$ irrational no.

• $\frac{\sqrt{48}}{\sqrt{12}} = \sqrt{\frac{48}{12}} = \sqrt{4} = \boxed{2}$

• $\sqrt{10^{10}} = \boxed{10^5}$

$\therefore$ Choice $\boxed{b}$

3. $\sqrt{\frac{x^2}{4} + \frac{4x^2}{9}} = \sqrt{\frac{9x^2+16x^2}{4(9)}} = \sqrt{\frac{25x^2}{4(9)}} = \frac{5}{2(3)}\sqrt{x^2}$.

but x is negative then $\sqrt{x^2} = -x$.

hence, $\sqrt{\frac{x^2}{4}+\frac{4x^2}{9}} = \frac{5(-x)}{6}$ Choice $\boxed{b}$