Задание для 8 класса городского конкурса АрифмоМэтр

$$\frac{\frac{\left(4\sqrt{3}-2\sqrt{5}\right)\cdot\sqrt{3}+\sqrt{60}}{\left(\frac{1}{3}\sqrt{6}+\sqrt{2}\right)\cdot\left(\sqrt{2}-\frac{1}{3}\sqrt{6}\right)}-\left(\frac{2\sqrt{2}+\sqrt{7}}{2\sqrt{2}-\sqrt{7}}-4\sqrt{14}\right)}{\left(-4,4:\left(-2\frac{1}{5}\right)-3,2\right)\cdot\frac{5}{6}}+\frac{\left(\sqrt{7-2\sqrt{6}}-\sqrt{7+2\sqrt{6}}\right)^2}{\frac{1}{5+2\sqrt{6}}+\frac{1}{5-2\sqrt{6}}}-\sqrt{\frac{165^2-124^2}{164}}$$

Решение:

1) $\left(4\sqrt{3}-2\sqrt{5}\right)\cdot\sqrt{3}+\sqrt{60}=4\cdot3-2\sqrt{15}+2\sqrt{15}=12$

2) $\left(\frac{1}{3}\sqrt{6}+\sqrt{2}\right)\cdot\left(\sqrt{2}-\frac{1}{3}\sqrt{6}\right)=2-\frac{1}{9}\cdot6=2-\frac{2}{3}=1\frac{1}{3}$

3) $12:1\frac{1}{3}=12\cdot\frac{3}{4}=9$

4) $\frac{2\sqrt{2}+\sqrt{7}}{2\sqrt{2}-\sqrt{7}}-4\sqrt{14}=\frac{\left(2\sqrt{2}+\sqrt{7}\right)\cdot\left(2\sqrt{2}+\sqrt{7}\right)}{\left(2\sqrt{2}-\sqrt{7}\right)\cdot\left(2\sqrt{2}+\sqrt{7}\right)}-4\sqrt{14}=\frac{\left(2\sqrt{2}+\sqrt{7}\right)^2}{8-7}-4\sqrt{14}=$

$=8+4\sqrt{14}+7-4\sqrt{14}=15$

5) $\left(-4,4:\left(-2\frac{1}{5}\right)-3,2\right)\cdot\frac{5}{6}=\left(\frac{44}{10}\cdot\frac{5}{11}-3,2\right)\cdot\frac{5}{6}=-1,2\cdot\frac{5}{6}=-1$

6) $(9-15):(-1)=6$

7) $\left(\sqrt{7-2\sqrt{6}}-\sqrt{7+2\sqrt{6}}\right)^2=7-2\sqrt{6}-2\sqrt{\left(7-2\sqrt{6}\right)\left(7+2\sqrt{6}\right)}+7+2\sqrt{6}=$

$=14-2\sqrt{49-24}=14-10=4$

8) $\frac{1}{5+2\sqrt{6}}+\frac{1}{5-2\sqrt{6}}=\frac{5-2\sqrt{6}+5+2\sqrt{6}}{25-24}=10$

9) 4:10=0,4

10) $\sqrt{\frac{165^2-124^2}{164}}=\sqrt{\frac{(165-124)(165+124)}{164}}=\sqrt{\frac{41\cdot289}{164}}=\sqrt{\frac{289}{4}}=\frac{17}{2}=8,5$

11) $6+0,4-8,5=-2,1$