Решить примеры.

1)

$$(\sqrt{3}-\sqrt{8})(\sqrt{3}+\sqrt{2})=3+\sqrt{6}-2\sqrt{6}-4=-1-\sqrt{6}$$

2)

$$(3\sqrt{5}-\sqrt{10})^2+30\sqrt{2}=(3\sqrt{5}-\sqrt{10})(3\sqrt{5}-\sqrt{10})+30\sqrt{2}=$$

$$=9\sqrt{5\cdot5}-3\sqrt{2\cdot5\cdot5}-3\sqrt{2\cdot5\cdot5}+\sqrt{10^2}+30\sqrt{2}=45-30\sqrt{2}+10+30\sqrt{2}=$$

$$=55$$

3)

$$(\sqrt{6}-\sqrt{3})^2+\sqrt{72}=(\sqrt{6}-\sqrt{3})(\sqrt{6}-\sqrt{3})+\sqrt{72}=$$

$$=6-\sqrt{2\cdot3\cdot3}-\sqrt{3\cdot3\cdot2}+3+\sqrt{2\cdot6\cdot6}=6-3\sqrt{2}-3\sqrt{2}+3+6\sqrt{2}=9$$

4)

$$(\sqrt{5}-\sqrt{15})^2+\sqrt{300}=(\sqrt{5}-\sqrt{15})(\sqrt{5}-\sqrt{15})+\sqrt{3\cdot10\cdot10}=$$

$$=5-\sqrt{3\cdot5\cdot5}-\sqrt{3\cdot5\cdot5}+15+10\sqrt{3}=5-5\sqrt{3}-5\sqrt{3}+15+10\sqrt{3}=20$$

5)

$$(\sqrt{10}-3\sqrt{5})^2+6\sqrt{18}=(\sqrt{10}-3\sqrt{5})(\sqrt{10}-3\sqrt{5})+6\sqrt{3\cdot3\cdot2}=$$

$$=10-3\sqrt{2\cdot5\cdot5}-3\sqrt{2\cdot5\cdot5}+45+18\sqrt{2}=10-15\sqrt{2}-15\sqrt{2}+45+18\sqrt{2}=$$

$$=55-12\sqrt{2}$$

6)

$$(6\sqrt{2}+3\sqrt{3})^2-18\sqrt{24}=(6\sqrt{2}+3\sqrt{3})(6\sqrt{2}+3\sqrt{3})-18\sqrt{2\cdot2\cdot6}=$$

$$=72+18\sqrt{6}+18\sqrt{6}+27-36\sqrt{6}=99$$

Упростить выражение

1)

$$\sqrt{50a}-\sqrt{8a}+\sqrt{18a}=\sqrt{5\cdot5\cdot2\cdot a}-\sqrt{2\cdot2\cdot2\cdot a}+\sqrt{2\cdot3\cdot3\cdot a}=$$

$$=5\sqrt{2a}-2\sqrt{2a}+3\sqrt{2a}=6\sqrt{2a}$$

2)

$$6\sqrt{36x}-\sqrt{144x}+\sqrt{81x}=36\sqrt{x}-12\sqrt{x}+9\sqrt{x}=33\sqrt{x}$$

3)

$$5\sqrt{45y}-\sqrt{20y}+6\sqrt{80y}=5\sqrt{5\cdot3\cdot3\cdot y}-\sqrt{5\cdot2\cdot2\cdot y}+6\sqrt{2\cdot2\cdot2\cdot2\cdot5\cdot y}=$$

$$=15\sqrt{5y}-2\sqrt{5y}+24\sqrt{5y}=37\sqrt{5y}$$

4)

$$3\sqrt{72a}-\sqrt{242a}-5\sqrt{32a}=3\sqrt{2\cdot2\cdot2\cdot3\cdot3\cdot a}-\sqrt{2\cdot11\cdot11\cdot a}-5\sqrt{2\cdot2\cdot2\cdot2\cdot2\cdot a}=$$

$$18\sqrt{2a}-11\sqrt{2a}-20\sqrt{2a}=-13\sqrt{2a}$$

Сократить дроби

1)

$$\frac{\sqrt{50}-\sqrt{10}}{\sqrt{15}-\sqrt{3}}=\frac{\sqrt{10}\left(\sqrt{5}-1\right)}{\sqrt{3}\left(\sqrt{5}-1\right)}=\frac{\sqrt{10}}{\sqrt{3}}=\frac{\sqrt{30}}{3}$$

2)

$$\frac{\sqrt{12}+\sqrt{18}}{\sqrt{2}+\sqrt{3}}=\frac{\sqrt{6}\left(\sqrt{2}+\sqrt{3}\right)}{\sqrt{2}+\sqrt{3}}=\sqrt{6}$$

3)

$$\frac{a-b}{\sqrt{a-b}}=\frac{\sqrt{a-b}\,(a-b)}{a-b}=\sqrt{a-b}$$

"Откинутся" от иррациональности

1)

$$\frac{12}{5\sqrt{3}}=\frac{12\sqrt{3}}{5\sqrt{3\cdot3}}=\frac{12\sqrt{3}}{15}=\frac{4\sqrt{3}}{5}$$

2)

$$\frac{4}{\sqrt{x+y}}=\frac{4\sqrt{x+y}}{x+y}$$

3)

$$\frac{\sqrt{a}-\sqrt{b}}{\sqrt{ab}}=\frac{\sqrt{ab}\left(\sqrt{a}-\sqrt{b}\right)}{ab}=\frac{a\sqrt{b}-b\sqrt{a}}{ab}$$

4)

$$\frac{xy}{3\sqrt{x}}=\frac{xy\sqrt{x}}{3x}=\frac{y\sqrt{x}}{3}$$

5)

$$\frac{x^2-y^2}{\sqrt{x-y}}=\frac{(x-y)(x+y)\sqrt{x-y}}{x-y}=(x+y)\sqrt{x-y}$$

6)

$$\frac{\sqrt{a}-\sqrt{b}}{\sqrt{a}+\sqrt{b}}=\frac{\left(\sqrt{a}-\sqrt{b}\right)\left(\sqrt{a}-\sqrt{b}\right)}{\left(\sqrt{a}+\sqrt{b}\right)\left(\sqrt{a}-\sqrt{b}\right)}=\frac{a-\sqrt{ab}-\sqrt{ab}+b}{a-b}=$$

$$=\frac{a-2\sqrt{ab}+b}{a-b}$$

Преобразуйте выражение

1)

$$\left(\sqrt{3x}+\sqrt{3y}\right)^2-3(x+y)=\left(\sqrt{3x}+\sqrt{3y}\right)\left(\sqrt{3x}+\sqrt{3y}\right)-3(x+y)=$$

$$=3x+\sqrt{3x3y}+\sqrt{3x3y}+3y-3x-3y=2\sqrt{3x3y}=6\sqrt{xy}$$

2)

$$\left(2\sqrt{x+1}\right)\left(2\sqrt{x-1}\right)-(2x+1)^2=4\sqrt{(x+1)(x-1)}-(2x+1)^2=$$

$$4\sqrt{x^2-x+x-1}-(2x+1)^2=4\sqrt{x^2-1}-(2x+1)^2$$