1. $(\sqrt{3}-\sqrt{2})\cdot\left(\underbrace{\frac{4\sqrt{3}}{\sqrt{6}-\sqrt{2}}}_{(\sqrt{6}+\sqrt{2})}-\underbrace{\frac{3}{\sqrt{2}+1}}_{(\sqrt{2}-1)}\right)$

$= (\sqrt{3}-\sqrt{2}).\left(\frac{\cancel{4}\sqrt{3}(\sqrt{6}+\sqrt{2})}{\cancel{4}}-\frac{3(\sqrt{2}-1)}{1}\right)$

$= (\sqrt{3}-\sqrt{2}).(\sqrt{18}+\sqrt{6}-3\sqrt{2}+3)$

$= (\sqrt{3}-\sqrt{2}).(\cancel{3\sqrt{2}}+\sqrt{6}-\cancel{3\sqrt{2}}+3)$

$= (\sqrt{3}-\sqrt{2})(\sqrt{3}.\sqrt{2}+\sqrt{3}.\sqrt{3})$

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

$= 1.\sqrt{3} = \sqrt{3}$ bulunur.

Cevap: B

2.
$$\begin{array}{r} \sqrt[3]{27.(x-1)}+\sqrt[3]{8(y+1)} = 8 \\ \sqrt[3]{125(x-1)}-\sqrt[3]{y+1} = 9 \\ \hline 3.\sqrt[3]{x-1}+2\sqrt[3]{y+1} = 8 \\ 2/\quad 5\sqrt[3]{x-1}-\sqrt[3]{y+1} = 9 \\ \hline 3\sqrt[3]{x-1}+2\sqrt[3]{y+1} = 8 \\ +\quad 10\sqrt[3]{x-1}-2\sqrt[3]{y+11} = 18 \\ \hline 13\sqrt[3]{x-1} = 26 \end{array}$$

$(\sqrt[3]{x-1})^3 = (2)^3$

$x-1 = 8 \Rightarrow x = 9$

Cevap: D

3. $(3\sqrt{x}-\sqrt{3y})^2 = (3)^2$

$9x+3y-6\sqrt{3xy} = 9$

$\sqrt{3xy}-x-y = -1$

$\sqrt{3xy} = x+y-1$ yazılır.

$9x+3y-6(x+y-1) = 9$

$9x+3y-6x-6y+6 = 9$

$3x-3y = 3$

$3(x-y) = 3 \Rightarrow x-y = 1$ bulunur.

Cevap: C

4. $\frac{\sqrt{32}-\sqrt{128}+\sqrt{98}}{\sqrt{36}}$

$= \frac{4\sqrt{2}-8\sqrt{2}+7\sqrt{2}}{6}$

$= \frac{3\sqrt{2}}{6} = \frac{\sqrt{2}}{2}$ bulunur.

Cevap: A

5.
$$\begin{array}{rr} & \sqrt{x+6}-\sqrt{x} = 18 \\ x & \sqrt{x+6}+\sqrt{x} = A \quad \text{olsun} \\ \hline (\sqrt{x+6}-\sqrt{x}).(\sqrt{x+6}+\sqrt{x}) & = 18.A \\ (\sqrt{x+6})^2-(\sqrt{x})^2 & = 18.A \\ \cancel{x}+6-\cancel{x} & = 18.A \\ 6 & = 18.A \end{array}$$

$\frac{6}{18} = A \Rightarrow A = \frac{1}{3}$ bulunur.

Cevap: E

6. $\sqrt{x} = a$ olsun

$a^2-\frac{\sqrt{7}}{a} = 8 \Rightarrow a^3-\sqrt{7} = 8a$

$a^3-8a = \sqrt{7}$ olur.

$* \quad \frac{1}{\sqrt{7}.a-a^2} = \frac{1}{a(\underbrace{\sqrt{7}-a}_{(\sqrt{7}+a)})} = \frac{\sqrt{7}+a}{a(7-a^2)}$

$\sqrt{7}$ yerine a^3-8a yazalım

$= \frac{a^3-8a+a}{a(7-a^2)} = \frac{a^3-7a}{a(7-a^2)}$

$= \frac{\cancel{a}(a^2-7)}{\cancel{a}(7-a^2)} = -1$ bulunur.

Cevap: B

7. $\sqrt{\frac{12}{5}+\sqrt{\frac{(0,14)x100}{(2,5)x10}+\sqrt{\frac{1}{0,3}+\frac{2}{3}}}}$

$=\sqrt{\frac{12}{5}+\sqrt{\frac{14}{25}+\sqrt{\frac{10}{3}+\frac{2}{3}}}}=4$

$=\sqrt{\frac{12}{5}+\sqrt{\frac{14}{25}+\sqrt{4}}}$

$=\sqrt{\frac{12}{5}+\sqrt{\frac{14}{25}+2}}$

$=\sqrt{\frac{12}{5}+\sqrt{\frac{64}{25}}}$

$=\sqrt{\frac{12}{5}+\frac{8}{5}}=\sqrt{\frac{20}{5}}$

$=\sqrt{4}=2$ bulunur.

Cevap: D

8. $\left(\sqrt{\frac{5-\sqrt{x}}{5+\sqrt{x}}}\right)^2=(5-\sqrt{x})^2$

$\left|\frac{5-\sqrt{x}}{5+\sqrt{x}}\right|=(5-\sqrt{x})^2$

$(5-\sqrt{x})$

$\left|\frac{(5-\sqrt{x})^2}{25-x}\right|=(5-\sqrt{x})^2 \rightarrow \frac{(5-\sqrt{x})^2}{|25-x|}=(5-\sqrt{x})^2$

$|25-x|=1$

i) $1=25-x$

$x=24$

Cevap: A

9. $\sqrt{3}-\sqrt{2}=x^2$

$(\sqrt{\sqrt{3}+1}-\sqrt{\sqrt{3}-1})^2=(A)^2$ olsun.

$\sqrt{3}+1+\sqrt{3}-1-2\sqrt{(\sqrt{3}+1)(\sqrt{3}-1)}=A^2$

$2\sqrt{3}-2\sqrt{3-1}=A^2$

$2\sqrt{3}-2\sqrt{2}=A^2$

$2(\underbrace{\sqrt{3}-\sqrt{2}}) = A^2$

$\sqrt{2x^2}=\sqrt{A^2}$

$\sqrt{2}.x=A$ bulunur.

$x\sqrt{2}=A$

Cevap: A

10. $\sqrt{\frac{x}{3}}+\sqrt{\frac{x}{27}}+\sqrt{\frac{x}{243}}=\frac{156}{54}$

$\Rightarrow \frac{\sqrt{x}}{\underset{(9)}{\sqrt{3}}}+\frac{\sqrt{x}}{\underset{(3)}{3\sqrt{3}}}+\frac{\sqrt{x}}{9\sqrt{3}}=\frac{156}{54}$

$\frac{9\sqrt{x}+3\sqrt{x}+\sqrt{x}}{9\sqrt{3}}=\frac{156}{54}$

$\frac{\cancel{13}\sqrt{x}}{\cancel{9}\sqrt{3}}=\frac{\overset{12}{\cancel{156}}}{\underset{6}{\cancel{54}}}$

$\left(\sqrt{\frac{x}{3}}\right)^2=(2)^2$

$\frac{x}{3}=4$

$x=12$ bulunur.

Cevap: E

TASARI EĞİTİM YAYINLARI

11. $x = 35$ ve $y = \sqrt{600}$

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

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

$2x - 2\sqrt{x^2 - y^2} = A^2$

$2.35 - 2\sqrt{(35)^2 - (\sqrt{600})^2} = A^2$

$70 - 2\sqrt{1225 - 600} = A^2$

$70 - 2\sqrt{625} = A^2$

$70 - 2.25 = A^2$

$70 - 50 = A^2$

$\sqrt{20} = \sqrt{A^2}$

$2\sqrt{5} = A$ bulunur.

Cevap: C

12. $x\sqrt{x} - 8\sqrt{x} = 7$

$x\sqrt{x} - 7\sqrt{x} - \sqrt{x} = 7$

$x\sqrt{x} - \sqrt{x} = 7 + 7\sqrt{x}$

$\sqrt{x}(x-1) = 7(1 + \sqrt{x})$

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

$\sqrt{x}((\sqrt{x}-1).(\sqrt{x}+1)) = 7(1+\sqrt{x})$

$x - \sqrt{x} = 7$ bulunur.

Cevap: C

13. $= \dfrac{\sqrt{\frac{144}{9}} + \sqrt{\frac{25}{100}} - \sqrt{\frac{256}{10000}}}{4,3}$

$= \dfrac{\frac{12}{3} + \sqrt{\frac{25}{100} - \frac{16}{100}}}{4,3}$

$= \dfrac{\frac{12}{3} + \sqrt{\frac{9}{100}}}{4,3} = \dfrac{\frac{12}{3} + \frac{3}{10}}{4,3}$

$= \dfrac{\frac{120+9}{30}}{\frac{43}{10}} = \dfrac{\overset{3}{\cancel{129}}}{30} \cdot \dfrac{10}{\cancel{43}} = 1$ bulunur.

Cevap: A

14. $x.y = 9$

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

$x + y - 2\underbrace{\sqrt{x.y}}_{9} = 3$

$x + y - 6 = 3$

$x + y = 9$ bulunur.

Cevap: D

15. $a = 3\sqrt{2} + 1 \Rightarrow a - 1 = 3\sqrt{2}$

$a^2 - 2a + 3 = \underbrace{a^2 - 2a + 1}_{} + 2$

$= (a-1)^2 + 2$

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

$= 18 + 2$

$= 20$ bulunur.

Cevap: A

16. $\dfrac{m}{A} = \dfrac{\frac{\sqrt{5}-1}{\sqrt{2}+1}}{\frac{\sqrt{2}-1}{\sqrt{5}+1}}$ Bölecek olursak

$\dfrac{m}{A} = \dfrac{\sqrt{5}-1}{\sqrt{2}+1} \cdot \dfrac{\sqrt{5}+1}{\sqrt{2}-1}$

$\dfrac{m}{A} = \dfrac{5-1}{2-1} = \dfrac{4}{1}$

$A = \dfrac{m}{4}$ bulunur.

Cevap: C

17. $\sqrt{a} - \frac{6}{\sqrt{a}} = 1$

$(a-6)^2 = (\sqrt{a})^2$

$a^2 - 12a + 36 = a$

$a^2 - 13a + 36 = 0$

$\downarrow$

$a \quad -9 \Rightarrow a = 9$

$a \quad -4 \Rightarrow a = 4$

$a = 9$ sağlıyor.

O halde $\sqrt[3]{3a} = \sqrt[3]{27} = \sqrt[3]{3^3}$

$= 3$ bulunur.

Cevap: C

18. $\sqrt{n^5.2025^3} = \sqrt[3]{2025^7}$ (dereceleri eşitleyelim)

$\sqrt[6]{n^{15}.2025^9} = \sqrt[6]{2025^{14}}$

$n^{15}.2025^9 = 2025^{14}$

$n^{15} = 2025^5$

$n^3 = 2025$

$n = \sqrt[3]{2025}$

Cevap: B

19. $\frac{\sqrt{6}+\sqrt{3}}{\sqrt{6}-\sqrt{2}+\sqrt{3}-1} = m + n\sqrt{3}$

$\frac{\sqrt{3}.\sqrt{2}+\sqrt{3}}{\sqrt{3}.\sqrt{2}-\sqrt{2}+\sqrt{3}-1} = m + n\sqrt{3}$

$\frac{\sqrt{3}(\sqrt{2}+1)}{\sqrt{2}(\sqrt{3}-1)+(\sqrt{3}-1)} = m + n\sqrt{3}$

$\frac{\sqrt{3}(\sqrt{2}+1)}{(\sqrt{3}-1)(\sqrt{2}+1)} = m + n\sqrt{3}$

$\frac{\sqrt{3}}{\underset{(\sqrt{3}+1)}{\sqrt{3}-1}} = m + n\sqrt{3}$

$\frac{3+\sqrt{3}}{2} = m + n\sqrt{3}$

$3 + \sqrt{3} = 2m + 2n\sqrt{3}$

$2m = 3 \Rightarrow m = \frac{3}{2}$, $2n = 1 \Rightarrow n = \frac{1}{2}$

O halde

$m + n = \frac{3}{2} + \frac{1}{2} = \frac{4}{2} = 2$

Cevap: D

20. $\frac{\sqrt{x+1}+\sqrt{4x(x+1)}}{4x-1} = 1$

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

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

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

$x + 1 = 4x + 1 - 4\sqrt{x}$

$4\sqrt{x} = 3x \qquad (x = \sqrt{x}.\sqrt{x})$

$4 = 3\sqrt{x}$

$(\sqrt{x})^2 = \left(\frac{4}{3}\right)^2$

$x = \frac{16}{9}$ bulunur.

Cevap: A