

1.

$$\begin{aligned} \sqrt{\frac{25}{4}-4} \cdot \sqrt{1-\frac{21}{25}} &= \sqrt{\frac{25-16}{4}} \cdot \sqrt{\frac{25-21}{25}} \\ &= \sqrt{\frac{9}{4}} \cdot \sqrt{\frac{4}{25}} \\ &= \frac{3}{2} \cdot \frac{2}{5} \\ &= \frac{3}{5} \end{aligned}$$

CEVAP: C

2.

$$\begin{aligned} \frac{2}{\sqrt{3}-\sqrt{2}} - \frac{6}{\sqrt{3}} &= \frac{2(\sqrt{3}+\sqrt{2})}{(\sqrt{3})^2-(\sqrt{2})^2} - \frac{6\sqrt{3}}{(\sqrt{3})^2} \\ &= \frac{2(\sqrt{3}+\sqrt{2})}{3-2} - \frac{6\sqrt{3}}{3} \\ &= 2(\sqrt{3}+\sqrt{2}) - 2\sqrt{3} \\ &= 2\sqrt{3} + 2\sqrt{2} - 2\sqrt{3} \\ &= 2\sqrt{2} \end{aligned}$$

CEVAP: C

3.

$$\begin{aligned} \frac{27}{\sqrt{3}} &= \frac{27}{\sqrt{3}} \cdot \frac{1}{\sqrt{3}} \\ &= \frac{27}{3} \\ &= 9 \end{aligned}$$

CEVAP: C

4.

$$\begin{aligned} \frac{\sqrt{3.6}-\sqrt{1.6}}{\sqrt{0.5}\sqrt{0.2}} &= \frac{\sqrt{\frac{36}{10}}-\sqrt{\frac{16}{10}}}{\sqrt{\frac{5}{10}}\sqrt{\frac{2}{10}}} \\ &= \frac{\frac{6}{\sqrt{10}}-\frac{4}{\sqrt{10}}}{\frac{\sqrt{5}}{\sqrt{10}}\cdot\frac{\sqrt{2}}{\sqrt{10}}} \\ &= \frac{2}{\frac{\sqrt{10}}{\sqrt{10}}} \\ &= \frac{2}{1} \\ &= 2 \end{aligned}$$

CEVAP: B

5.

$$\begin{aligned} \sqrt{3}-\frac{3-\sqrt{3}}{\frac{1}{\sqrt{3}}} &= \sqrt{3}-(3-\sqrt{3})\cdot\sqrt{3} \\ &= \sqrt{3}-3\sqrt{3}+3 \\ &= 3-2\sqrt{3} \end{aligned}$$

CEVAP: E



$$\begin{aligned}
 6. \quad a &= \sqrt{5} - 1 \\
 b &= \sqrt{5} + 1 \\
 \frac{a \cdot b}{a^2 - b^2} &= \frac{(\sqrt{5} - 1)(\sqrt{5} + 1)}{(a - b) \cdot (a + b)} \\
 &= \frac{(\sqrt{5} - 1)(\sqrt{5} + 1)}{[\sqrt{5} - 1 - (\sqrt{5} + 1)] \cdot (\sqrt{5} - 1 + \sqrt{5} + 1)} \\
 &= \frac{(\sqrt{5})^2 - 1^2}{(\sqrt{5} - 1 - \sqrt{5} - 1) \cdot (2\sqrt{5})} \\
 &= \frac{4}{(-2)2\sqrt{5}} \\
 &= \frac{4}{-4\sqrt{5}} \\
 &= -\frac{1}{\sqrt{5}} \\
 &= \frac{-\sqrt{5}}{5}
 \end{aligned}$$

CEVAP: A

$$\begin{aligned}
 7. \quad \sqrt{\left(\frac{0,25}{4}\right)^{-1}} &= \sqrt{\frac{4}{0,25}} \\
 &= \sqrt{\frac{4}{\frac{1}{4}}} \\
 &= \sqrt{4 \cdot 4} \\
 &= \sqrt{16} \\
 &= 4
 \end{aligned}$$

CEVAP: D

$$\begin{aligned}
 8. \quad \sqrt{(0,5)^2 - (0,4)^2} &= \sqrt{(0,5 - 0,4) \cdot (0,5 + 0,4)} \\
 &= \sqrt{0,1 \cdot 0,9} \\
 &= \sqrt{\frac{1}{10} \cdot \frac{9}{10}} \\
 &= \sqrt{\frac{9}{100}} \\
 &= \frac{3}{10} \\
 &= 0,3
 \end{aligned}$$

CEVAP: C

$$\begin{aligned}
 9. \quad a &= \sqrt{3} + 2 \\
 a^5 \cdot (a - 4)^6 &= (\sqrt{3} + 2)^5 \cdot (\sqrt{3} + 2 - 4)^6 \\
 &= (\sqrt{3} + 2)^5 \cdot (\sqrt{3} - 2)^6 \\
 &= (\sqrt{3} + 2)^5 \cdot (\sqrt{3} - 2)^5 \cdot (\sqrt{3} - 2) \\
 &= [(\sqrt{3} + 2) \cdot (\sqrt{3} - 2)]^5 \cdot (\sqrt{3} - 2) \\
 &= [(\sqrt{3})^2 - 2^2]^5 \cdot (\sqrt{3} - 2) \\
 &= (3 - 4)^5 \cdot (\sqrt{3} - 2) \\
 &= (-1)^5 \cdot (\sqrt{3} - 2) \\
 &= (-1) \cdot (\sqrt{3} - 2) \\
 &= 2 - \sqrt{3}
 \end{aligned}$$

CEVAP: C



10.

$$\begin{aligned}
 \sqrt{\frac{9^5 + 9^5 + 9^5}{27^4 + 27^4 + 27^4}} &= \sqrt{\frac{3 \cdot 9^5}{3 \cdot 27^4}} \\
 &= \sqrt{\frac{3 \cdot (3^2)^5}{3 \cdot (3^3)^4}} \\
 &= \sqrt{\frac{3 \cdot 3^{10}}{3 \cdot 3^{12}}} \\
 &= \sqrt{\frac{3^{11}}{3^{13}}} \\
 &= \sqrt{\frac{3^{11}}{3^{11} \cdot 3^2}} \\
 &= \sqrt{\frac{1}{3^2}} \\
 &= \frac{1}{3}
 \end{aligned}$$

CEVAP: C

$$11. \frac{\sqrt{4,5} + \sqrt{2}}{\sqrt{0,1}} = \frac{\sqrt{\frac{45}{10}} + \sqrt{2}}{\sqrt{\frac{1}{10}}} = \frac{3\sqrt{5} + \sqrt{2}}{\frac{1}{\sqrt{10}}}$$

$$= \frac{3\sqrt{5} + \sqrt{20}}{\frac{1}{\sqrt{10}}} = \frac{3\sqrt{5} + 2\sqrt{5}}{\frac{1}{\sqrt{10}}}$$

$$= \frac{5\sqrt{5}}{\frac{1}{\sqrt{10}}} = \frac{5\sqrt{5}}{1} \cdot \sqrt{10}$$

$$= 5\sqrt{5}$$

CEVAP: E

$$12. \frac{4\sqrt{27}}{\sqrt{3}} = 3^x$$

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

$$\frac{3^{\frac{3}{2}}}{3^{\frac{1}{2}}} = 3^x$$

$$3^{\frac{3}{2} - \frac{1}{2}} = 3^x \Rightarrow \frac{3}{4} - \frac{1}{2} = x$$

(2)

$$\frac{3-2}{4} = x$$

$$\frac{1}{4} = x$$

CEVAP: B

$$13. \frac{\sqrt{108} - \sqrt{18}}{\sqrt{12} - \sqrt{2}} = \frac{\sqrt{36 \cdot 3} - \sqrt{9 \cdot 2}}{\sqrt{4 \cdot 3} - \sqrt{2}} = \frac{6\sqrt{3} - 3\sqrt{2}}{2\sqrt{3} - \sqrt{2}} = \frac{3(2\sqrt{3} - \sqrt{2})}{2\sqrt{3} - \sqrt{2}} = 3$$

CEVAP: B

$$14. a = 2 - \sqrt{3}$$

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

$$\frac{a}{b} + \frac{b}{a} = \frac{a^2 + b^2}{a \cdot b}$$

(a)(b)

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

$$= \frac{4 - 4\sqrt{3} + 3 + 4 + 4\sqrt{3} + 3}{2^2 - (\sqrt{3})^2}$$

$$= \frac{14}{4 - 3} = 14$$

CEVAP: E

15. $a < b < 0$

$$\begin{aligned}\sqrt{(b-a)^2} - \sqrt{(2a-b)^2} &= \left| \overset{+}{b-a} \right| - \left| \overset{-}{2a-b} \right| \\ &= (b-a) + (2a-b) \\ &= b-a+2a-b \\ &= a\end{aligned}$$

CEVAP: A

16.

$$\begin{aligned}2\sqrt{18a} + 3\sqrt{50a} - 8\sqrt{8a} &= 10\sqrt{2} \\ 2\sqrt{9 \cdot 2a} + 3\sqrt{25 \cdot 2a} - 8\sqrt{4 \cdot 2a} &= 10\sqrt{2} \\ 2 \cdot 3\sqrt{2a} + 3 \cdot 5\sqrt{2a} - 8 \cdot 2\sqrt{2a} &= 10\sqrt{2} \\ 6\sqrt{2a} + 15\sqrt{2a} - 16\sqrt{2a} &= 10\sqrt{2} \\ 5 \cdot \sqrt{2a} &= 10\sqrt{2} \\ 5\sqrt{2} \cdot \sqrt{a} &= 10\sqrt{2} \\ 5 \cdot \sqrt{a} &= 10 \\ \sqrt{a} &= 2 \\ a &= 4\end{aligned}$$

CEVAP: B

17.

$$\begin{aligned}\frac{x}{3 \cdot \sqrt{(1-\sqrt{2})^2}} &= \sqrt{2} + 1 \\ \frac{x}{3 \cdot |1-\sqrt{2}|} &= \sqrt{2} + 1 \\ \frac{x}{3 \cdot (\sqrt{2}-1)} &= \sqrt{2} + 1 \\ x &= 3 \cdot (\sqrt{2}-1)(\sqrt{2}+1) \\ x &= 3 \cdot [(\sqrt{2})^2 - 1^2] \\ x &= 3 \cdot (2-1) \\ x &= 3\end{aligned}$$

CEVAP: C

18. $\sqrt{21} = a \Rightarrow \frac{\sqrt{21}}{\sqrt{3}} = \frac{a}{c}$

$$\begin{aligned}\sqrt{3} &= c \\ \sqrt{7} &= \frac{a}{c} \\ \sqrt{15} = b \Rightarrow \frac{\sqrt{15}}{\sqrt{3}} &= \frac{b}{c} \\ \sqrt{3} &= c \\ \sqrt{5} &= \frac{b}{c} \\ \sqrt{35} &= \sqrt{5} \cdot \sqrt{7}, \left(\sqrt{7} = \frac{a}{c}, \sqrt{5} = \frac{b}{c} \right) \\ &= \frac{b}{c} \cdot \frac{a}{c} \\ &= \frac{ab}{c^2}\end{aligned}$$

CEVAP: B

19.

$$\begin{aligned}a &= \sqrt{3} - \sqrt{2} \\ \frac{a(a+2\sqrt{2})}{a^2\sqrt{8a}+2} &= \frac{(\sqrt{3}-\sqrt{2}) \cdot (\sqrt{3}-\sqrt{2}+2\sqrt{2})}{a^2+2\sqrt{2a}+2} \\ &= \frac{(\sqrt{3}-\sqrt{2}) \cdot (\sqrt{3}+\sqrt{2})}{(a+\sqrt{2})^2} \\ &= \frac{(\sqrt{3})^2 - (\sqrt{2})^2}{(\sqrt{3}-\sqrt{2}+\sqrt{2})^2} \\ &= \frac{3-2}{(\sqrt{3})^2} \\ &= \frac{1}{3}\end{aligned}$$

CEVAP: C

20. $\sqrt{a} \cdot \sqrt[3]{a} = 9$

$$\begin{aligned}a^{\frac{1}{2}} a^{\frac{1}{3}} &= 9 \\ a^{\frac{1}{2} + \frac{1}{3}} &= 9 \\ a^{\frac{3}{6} + \frac{2}{6}} &= 9 \\ a^{\frac{5}{6}} &= 9 \\ a^{\frac{4}{6}} &= 9 \Rightarrow a^{\frac{2}{3}} = 3^2 \\ a &= 3^{\frac{2}{3} \cdot \frac{3}{2}} \\ a &= 3^3 \\ a &= 27\end{aligned}$$

CEVAP: D