

Radical Review Man.....don't have a cow!!!

Simplify, rationalize, add fractions, multiply, etc. as indicated:

$$\begin{aligned}
 1. \quad & 3\sqrt{50} \\
 &= 3\sqrt{2 \cdot 5 \cdot 5} \\
 &= [5]3\sqrt{2} \\
 &= 15\sqrt{2}
 \end{aligned}$$

$$\begin{aligned}
 2. \quad & 2\sqrt{3} - 5\sqrt{3} \\
 &= -3\sqrt{3}
 \end{aligned}$$

$$\begin{aligned}
 3. \quad & \sqrt{12} + \sqrt{27} \\
 &= \sqrt{2 \cdot 2 \cdot 3} + \sqrt{3 \cdot 3 \cdot 3} \\
 &= 2\sqrt{3} + 3\sqrt{3} \\
 &= 5\sqrt{3}
 \end{aligned}$$

$$\begin{aligned}
 4. \quad & \frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{4} \\
 &= \frac{[2]\sqrt{3}}{[2]2} - \frac{\sqrt{3}}{2 \cdot 2} \\
 &= \frac{2\sqrt{3}}{4} - \frac{\sqrt{3}}{4} \\
 &= \frac{(2\sqrt{3}) - (\sqrt{3})}{4} \\
 &= \frac{2\sqrt{3} - \sqrt{3}}{4} \\
 &= \frac{\sqrt{3}}{4}
 \end{aligned}$$

$$\begin{aligned}
 & \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{3} \\
 5. \quad &= \frac{[3]\sqrt{3}}{[3]2} + \frac{[2]\sqrt{2}}{[2]3} \\
 &= \frac{3\sqrt{3}}{6} + \frac{2\sqrt{2}}{6} \\
 &= \frac{(3\sqrt{3}) + (2\sqrt{2})}{6} \\
 &= \frac{3\sqrt{3} + 2\sqrt{2}}{6}
 \end{aligned}$$

$$\begin{aligned}
 6. \quad & \frac{1}{\sqrt{2}} \\
 &= \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} \\
 &= \frac{\sqrt{2}}{\sqrt{4}} \\
 &= \frac{\sqrt{2}}{2}
 \end{aligned}$$

$$\begin{aligned}
 7. \quad & (2\sqrt{3})(-4\sqrt{5}) \\
 &= -8\sqrt{15}
 \end{aligned}$$

$$\begin{aligned}
 8. \quad & (2 + \sqrt{3})(4 + 3\sqrt{3}) \\
 &= 8 + 6\sqrt{3} + 4\sqrt{3} + \sqrt{9} \\
 &= 8 + 6\sqrt{3} + 4\sqrt{3} + 3 \\
 &= 11 + 10\sqrt{3}
 \end{aligned}$$

$$\begin{aligned}
 9. \quad & \frac{1}{\sqrt{2}} - \frac{3}{2\sqrt{3}} \\
 &= \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} - \frac{3}{2\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} \\
 &= \frac{\sqrt{2}}{\sqrt{4}} - \frac{3\sqrt{3}}{2\sqrt{9}} \\
 &= \frac{\sqrt{2}}{2} - \frac{3\sqrt{3}}{6} \\
 &= \frac{\sqrt{2}}{2} - \frac{3\sqrt{3}}{2 \cdot 3} \\
 &= \frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2} \\
 &= \frac{(\sqrt{2}) - (\sqrt{3})}{2} \\
 &= \frac{\sqrt{2} - \sqrt{3}}{2}
 \end{aligned}$$

$$\begin{aligned}
 10. \quad & \frac{1}{3} \times \frac{3}{4} \\
 &= \frac{1}{3} \times \frac{3}{4} \\
 &= \frac{1}{4}
 \end{aligned}$$

$$\begin{aligned}
 11. \quad & \frac{2}{3} \div \frac{4}{3} \\
 &= \frac{2}{3} \times \frac{3}{4} \\
 &= \frac{2}{3} \times \frac{3}{2 \cdot 2} \\
 &= \frac{1}{2}
 \end{aligned}$$

$$\begin{aligned}
 12. \quad & \frac{\frac{2}{3}}{\frac{3}{5}} \\
 &= \frac{2}{3} \div \frac{3}{5} \\
 &= \frac{2}{3} \times \frac{5}{3} \\
 &= \frac{10}{9}
 \end{aligned}$$

13.

$$\begin{aligned}
& \frac{\frac{1}{2}}{\frac{1}{4}} + \frac{\frac{1}{3}}{\frac{1}{9}} \\
&= \frac{1}{2} \div \frac{1}{4} + \frac{1}{3} \div \frac{1}{9} \\
&= \frac{1}{2} \times \frac{4}{1} + \frac{1}{3} \times \frac{9}{1} \\
&= \frac{1}{2} \times \frac{2 \cdot 2}{1} + \frac{1}{3} \times \frac{3 \cdot 3}{1} \\
&= \frac{2}{1} + \frac{3}{1} \\
&= 2 + 3 \\
&= 5
\end{aligned}$$

14.

$$\begin{aligned}
& \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{3}}{2}} + \frac{\frac{\sqrt{2}}{2}}{\frac{1}{2}} \\
&= \frac{\sqrt{2}}{2} \div \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} \div \frac{1}{2} \\
&= \frac{\sqrt{2}}{2} \times \frac{2}{\sqrt{3}} + \frac{\sqrt{2}}{2} \times \frac{2}{1} \\
&= \frac{\sqrt{2}}{\sqrt{3}} + \frac{\sqrt{2}}{1} \\
&= \frac{\sqrt{2}}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} + \frac{\sqrt{2}}{1} \\
&= \frac{\sqrt{6}}{\sqrt{9}} + \frac{\sqrt{2}}{1} \\
&= \frac{\sqrt{6}}{3} + \frac{\sqrt{2}}{1} \\
&= \frac{\sqrt{6}}{3} + \frac{[3]\sqrt{2}}{1[3]} \\
&= \frac{\sqrt{6}}{3} + \frac{3\sqrt{2}}{3} \\
&= \frac{(\sqrt{6}) + (3\sqrt{2})}{3} \\
&= \frac{\sqrt{6} + 3\sqrt{2}}{3}
\end{aligned}$$