

Square Roots

Simplify.

1. $-2\sqrt{98}$

$\begin{matrix} \wedge \\ 2 \cdot 49 \\ \downarrow \\ 2 \cdot 7 \end{matrix}$
 $\boxed{-14\sqrt{2}}$

3. $5\sqrt{3} + 4\sqrt{12} - 2\sqrt{75}$

$\begin{matrix} \wedge & & \wedge \\ 3 \cdot 4 & & 3 \cdot 25 \\ \downarrow & & \downarrow \\ 4 \cdot 2 \sqrt{3} & & 2 \cdot 5 \sqrt{3} \end{matrix}$

$5\sqrt{3} + 8\sqrt{3} - 10\sqrt{3}$

$\boxed{3\sqrt{3}}$

5. $4\sqrt{3}(3\sqrt{6} - 2\sqrt{13})$

$\begin{matrix} \wedge & & \wedge \\ 0 \cdot 3 & & 3 \cdot 13 \\ \downarrow & & \downarrow \\ 12 \cdot 3 \sqrt{2} & & 8 \cdot 3 \sqrt{9} \end{matrix}$

$\boxed{36\sqrt{2} - 8\sqrt{39}}$

7. $\frac{\sqrt{21}}{\sqrt{3}} = \sqrt{\frac{21}{3}} = \boxed{\sqrt{7}}$

Combine Like Terms

2. $8\sqrt{3} + 4\sqrt{2} - 1\sqrt{2} + 1\sqrt{3}$

$8\sqrt{3} + 1\sqrt{3} + 4\sqrt{2} - 1\sqrt{2}$

$\boxed{9\sqrt{3} + 3\sqrt{2}}$

4. $3\sqrt{6} \cdot 5\sqrt{2}$

$15\sqrt{12}$

$\begin{matrix} \wedge \\ 3 \cdot 4 \\ \downarrow \\ 15 \cdot 2 \sqrt{3} \end{matrix}$
 $\boxed{30\sqrt{3}}$

6. $(2\sqrt{3})^2 = (2\sqrt{3})(2\sqrt{3})$

$4\sqrt{9}$

$4(3) = \boxed{12}$

8. $\frac{\sqrt{5}}{\sqrt{11}} \cdot \frac{\sqrt{11}}{\sqrt{11}} = \frac{\sqrt{55}}{\sqrt{121}} = \boxed{\frac{\sqrt{55}}{11}}$