

Performing Operations on Radicals

Adding & Subtracting:

$$\textcircled{1} 4\sqrt{10} + 9\sqrt{10}$$

$$13\sqrt{10}$$

$$\textcircled{2} \sqrt{5} - 6\sqrt{5}$$

$$-5\sqrt{5}$$

$$\textcircled{3} 4\sqrt{10} + \sqrt{13} - 9\sqrt{10}$$

$$-5\sqrt{10} + \sqrt{13}$$

$$\textcircled{4} 5\sqrt{3} + \sqrt{48}$$

$$5\sqrt{3} + \sqrt{16 \cdot 3}$$

$$5\sqrt{3} + 4\sqrt{3}$$

$$9\sqrt{3}$$

$$\textcircled{5} 7\sqrt{14} + \sqrt{21} - 4\sqrt{14}$$

$$3\sqrt{14} + \sqrt{21}$$

$$\textcircled{6} 2\sqrt{7} - \sqrt{28}$$

$$2\sqrt{7} - \sqrt{4 \cdot 7}$$

$$2\sqrt{7} - 2\sqrt{7}$$

$$0$$

Multiplying

$$\textcircled{1} \sqrt{5} (4 - \sqrt{20})$$

$$\textcircled{2} \sqrt{3} (2 + \sqrt{12})$$

$$\textcircled{1} \sqrt{5} (4 - \sqrt{20})$$

$$4\sqrt{5} - \sqrt{5 \cdot 20}$$

$$4\sqrt{5} - \sqrt{100}$$

$$4\sqrt{5} - 10$$

$$\textcircled{2} \sqrt{3} (2 + \sqrt{12})$$

$$2\sqrt{3} + \sqrt{3 \cdot 12}$$

$$2\sqrt{3} + \sqrt{36}$$

$$\boxed{2\sqrt{3} + 6}$$

$$\textcircled{3} (\sqrt{7} + \sqrt{2})(\sqrt{7} - 3\sqrt{2})$$

$$\sqrt{7 \cdot 7} - 3\sqrt{7 \cdot 2} + \sqrt{7 \cdot 2} - 3\sqrt{2 \cdot 2}$$

$$\sqrt{49} - 3\sqrt{14} + \sqrt{14} - 3\sqrt{4}$$

$$7 - 2\sqrt{14} - 3 \cdot 2$$

$$7 - 2\sqrt{14} - 6 = \boxed{1 - 2\sqrt{14}}$$

$$\textcircled{4} (\sqrt{2} + \sqrt{5})(\sqrt{2} - 3\sqrt{5})$$

$$2 - 3\sqrt{10} + \sqrt{10} - 3 \cdot 5$$

$$-13 - 2\sqrt{10}$$

$$\textcircled{5} (4 - \sqrt{5})(1 - \sqrt{5})$$

$$4 - 4\sqrt{5} - \sqrt{5} + 5$$

$$9 - 5\sqrt{5}$$

$$\textcircled{6} (1 - \sqrt{2})^2$$

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

$$1 - \sqrt{2} - \sqrt{2} + 2$$

$$3 - 2\sqrt{2}$$