

## Adding and Subtracting Radical Expressions

Simplify.

$$1) \underbrace{3\sqrt{6} - 4\sqrt{6}}_{\text{same}} = -1\sqrt{6} \quad \text{or } \textcircled{-\sqrt{6}}$$

$$2) -3\sqrt{7} + 4\sqrt{7} = 1\sqrt{7} \text{ or } \textcircled{\sqrt{7}}$$

$$3) -11\sqrt{21} - 11\sqrt{21} = \textcircled{0}$$

$$4) -9\sqrt{15} + 10\sqrt{15} = 1\sqrt{15} \text{ or } \textcircled{\sqrt{15}}$$

$$5) -10\sqrt{7} + 12\sqrt{7} = \textcircled{2\sqrt{7}}$$

$$6) -3\sqrt{17} - 4\sqrt{17} = \textcircled{-7\sqrt{17}}$$

$$7) -10\sqrt{11} - 11\sqrt{11} = \textcircled{-21\sqrt{11}}$$

not same radical so you have to simplify  $\sqrt{27}$

$$8) -2\sqrt{3} + 3\sqrt{27}$$

$$-2\sqrt{3} + 3(3\sqrt{3}) = -2\sqrt{3} + 9\sqrt{3} = \textcircled{7\sqrt{3}}$$

$$9) 2\sqrt{6} - 2\sqrt{24}$$

$$2\sqrt{6} - 2(2\sqrt{6})$$

$$2\sqrt{6} - 4\sqrt{6} = \textcircled{-2\sqrt{6}}$$

$$10) 2\sqrt{6} + 3\sqrt{54}$$

$$2\sqrt{6} + 3(3\sqrt{6})$$

$$2\sqrt{6} + 9\sqrt{6} = \textcircled{11\sqrt{6}}$$

$$11) -\sqrt{12} + 3\sqrt{3}$$

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

$$1\sqrt{3} \text{ or } \textcircled{\sqrt{3}}$$

$$12) 3\sqrt{3} - \sqrt{27}$$

$$3\sqrt{3} - 3\sqrt{3} = \textcircled{0}$$

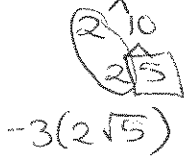
13)  $3\sqrt{8} + 3\sqrt{2}$



$3(2\sqrt{2}) + 3\sqrt{2}$   
 $6\sqrt{2} + 3\sqrt{2}$   
 $9\sqrt{2}$

14)  $-3\sqrt{6} + 3\sqrt{6} = 0$

15)  $-3\sqrt{20} - \sqrt{5}$



$-6\sqrt{5} - \sqrt{5}$   
 $-7\sqrt{5}$

16)  $2\sqrt{45} - 2\sqrt{5}$



$6\sqrt{5} - 2\sqrt{5}$   
 $4\sqrt{5}$

17)  $3\sqrt{18} - 2\sqrt{2}$



$9\sqrt{2} - 2\sqrt{2}$   
 $7\sqrt{2}$

18)  $-3\sqrt{18} + 3\sqrt{8} - \sqrt{24}$



$-9\sqrt{2} + 6\sqrt{2} - 2\sqrt{6}$   
 $-3\sqrt{2} - 2\sqrt{6}$

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

19)  $3\sqrt{18} + 3\sqrt{12} + 2\sqrt{27}$



$9\sqrt{2} + 6\sqrt{3} + 6\sqrt{3}$   
 $9\sqrt{2} + 12\sqrt{3}$

20)  $-3\sqrt{5} - \sqrt{6} - \sqrt{5}$

$= -4\sqrt{5} - \sqrt{6}$

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

21)  $-3\sqrt{2} + 3\sqrt{20} - 3\sqrt{8}$



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

$-3\sqrt{2} + 6\sqrt{5} - 6\sqrt{2}$

$-9\sqrt{2} + 6\sqrt{5}$

22)  $-3\sqrt{3} - \sqrt{8} - 3\sqrt{3}$

$-6\sqrt{3} - \sqrt{8}$



$-6\sqrt{3} - 2\sqrt{2}$