

MCR3U - WS - Radicals

- Write each as a mixed radical ($a\sqrt{b}$) in simplest form:
a) $-4\sqrt{18}$ b) $7\sqrt{125}$
- Write each as a mixed radical ($a\sqrt{b}$) in simplest form:
a) $\sqrt{112}$ b) $-9\sqrt{50}$
- Write each as a mixed radical ($a\sqrt{b}$) in simplest form:
a) $5\sqrt{12}$ b) $\sqrt{32}$
- Write each as a mixed radical ($a\sqrt{b}$) in simplest form:
a) $6\sqrt{48}$ b) $-4\sqrt{8}$
- Write each as a mixed radical ($a\sqrt{b}$) in simplest form:
a) $4\sqrt{27}$ b) $-8\sqrt{72}$
- Write each as an entire radical (\sqrt{a}):
a) $8\sqrt{3}$ b) $-7\sqrt{2}$
- Write each as an entire radical (\sqrt{a}):
a) $6\sqrt{2}$ b) $-6\sqrt{3}$
- Write each as an entire radical (\sqrt{a}):
a) $-4\sqrt{7}$ b) $12\sqrt{3}$
- Write each as an entire radical (\sqrt{a}):
a) $10\sqrt{2}$ b) $-9\sqrt{3}$
- Simplify:
 $6\sqrt{128} + 6\sqrt{108} + 10\sqrt{75} - 5\sqrt{50}$
- Simplify:
 $-7\sqrt{125} + 8\sqrt{112} + 9\sqrt{63} - 7\sqrt{20}$
- Simplify:
 $8\sqrt{18} - 10\sqrt{48} - 6\sqrt{12} + 3\sqrt{50}$
- Simplify:
 $2\sqrt{12} + 6\sqrt{80} - 7\sqrt{20} - 2\sqrt{108}$
- Simplify:
 $6\sqrt{72} - 3\sqrt{12} - \sqrt{48} - 5\sqrt{128}$
- Simplify:
 $2\sqrt{128} - 7\sqrt{45} - 2\sqrt{20} - \sqrt{8}$
- Simplify $\sqrt{\frac{8}{175}}$
- Simplify $\sqrt{\frac{98}{245}}$
- Simplify $\sqrt{\frac{125}{20}}$
- Simplify $\sqrt{\frac{343}{27}}$
- Simplify $\frac{2\sqrt{7} - 2\sqrt{2}}{4\sqrt{35} - 5\sqrt{10}}$
- Simplify $\frac{2\sqrt{21} - \sqrt{14}}{-4\sqrt{21} - 3\sqrt{14}}$
- Simplify $\frac{-\sqrt{7}}{-\sqrt{7} - \sqrt{5}}$
- Simplify $\frac{-\sqrt{10} - 5\sqrt{15}}{4\sqrt{2} - 3\sqrt{3}}$

COMMUNICATION	No Level	0 1 2 3 4	5	6	7	8	9	10
Conventions & Terminology	No level assigned based on content of this page	Unacceptable	Few Major / Many Minor Errors		Few Minor Errors		No Errors	
Expression & Organization			Significant Improvements Required		Few Improvements Required		No Improvements Required	

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Answer Section

1. ANS:

a) $-12\sqrt{2}$ b) $35\sqrt{5}$

PTS: 1

2. ANS:

a) $4\sqrt{7}$ b) $-45\sqrt{2}$

PTS: 1

3. ANS:

a) $10\sqrt{3}$ b) $4\sqrt{2}$

PTS: 1

4. ANS:

a) $24\sqrt{3}$ b) $-8\sqrt{2}$

PTS: 1

5. ANS:

a) $12\sqrt{3}$ b) $-48\sqrt{2}$

PTS: 1

6. ANS:

a) $2\sqrt{48}$ b) $-\sqrt{98}$

PTS: 1

7. ANS:

a) $\sqrt{72}$ b) $-\sqrt{108}$

PTS: 1

8. ANS:

a) $-\sqrt{112}$ b) $6\sqrt{12}$

PTS: 1

9. ANS:

a) $5\sqrt{8}$ b) $-3\sqrt{27}$

PTS: 1

10. ANS:

$$6\sqrt{128} + 6\sqrt{108} + 10\sqrt{75} - 5\sqrt{50} = 48\sqrt{2} + 36\sqrt{3} + 50\sqrt{3} - 25\sqrt{2}$$

$$= 23\sqrt{2} + 86\sqrt{3}$$

PTS: 1

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11. ANS:

$$\begin{aligned} -7\sqrt{125} + 8\sqrt{112} + 9\sqrt{63} - 7\sqrt{20} &= -35\sqrt{5} + 32\sqrt{7} + 27\sqrt{7} - 14\sqrt{5} \\ &= -49\sqrt{5} + 59\sqrt{7} \end{aligned}$$

PTS: 1

12. ANS:

$$\begin{aligned} 8\sqrt{18} - 10\sqrt{48} - 6\sqrt{12} + 3\sqrt{50} &= 24\sqrt{2} - 40\sqrt{3} - 12\sqrt{3} + 15\sqrt{2} \\ &= 39\sqrt{2} - 52\sqrt{3} \end{aligned}$$

PTS: 1

13. ANS:

$$\begin{aligned} 2\sqrt{12} + 6\sqrt{80} - 7\sqrt{20} - 2\sqrt{108} &= 4\sqrt{3} + 24\sqrt{5} - 14\sqrt{5} - 12\sqrt{3} \\ &= -8\sqrt{3} + 10\sqrt{5} \end{aligned}$$

PTS: 1

14. ANS:

$$\begin{aligned} 6\sqrt{72} - 3\sqrt{12} - \sqrt{48} - 5\sqrt{128} &= 36\sqrt{2} - 6\sqrt{3} - 4\sqrt{3} - 40\sqrt{2} \\ &= -4\sqrt{2} - 10\sqrt{3} \end{aligned}$$

PTS: 1

15. ANS:

$$\begin{aligned} 2\sqrt{128} - 7\sqrt{45} - 2\sqrt{20} - \sqrt{8} &= 16\sqrt{2} - 21\sqrt{5} - 4\sqrt{5} - 2\sqrt{2} \\ &= 14\sqrt{2} - 25\sqrt{5} \end{aligned}$$

PTS: 1

16. ANS:

$$\begin{aligned} \sqrt{\frac{8}{175}} &= \frac{\sqrt{4 \times 2}}{\sqrt{25 \times 7}} \\ &= \frac{2\sqrt{2}}{5\sqrt{7}} \end{aligned}$$

PTS: 1

DIF: 1

17. ANS:

$$\begin{aligned} \sqrt{\frac{98}{245}} &= \frac{\sqrt{49 \times 2}}{\sqrt{49 \times 5}} \\ &= \frac{7\sqrt{2}}{7\sqrt{5}} \end{aligned}$$

PTS: 1

DIF: 1

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18. ANS:

$$\begin{aligned}\sqrt{\frac{125}{20}} &= \frac{\sqrt{25 \times 5}}{\sqrt{4 \times 5}} \\ &= \frac{5\sqrt{5}}{2\sqrt{5}}\end{aligned}$$

PTS: 1

DIF: 1

19. ANS:

$$\begin{aligned}\sqrt{\frac{343}{27}} &= \frac{\sqrt{49 \times 7}}{\sqrt{9 \times 3}} \\ &= \frac{7\sqrt{7}}{3\sqrt{3}}\end{aligned}$$

PTS: 1

DIF: 1

20. ANS:

$$\begin{aligned}\frac{2\sqrt{7} - 2\sqrt{2}}{4\sqrt{35} - 5\sqrt{10}} &= \frac{8\sqrt{245} - 10\sqrt{70} - 8\sqrt{70} + 10\sqrt{20}}{16\sqrt{1225} + 20\sqrt{350} - 20\sqrt{350} + 25\sqrt{100}} \\ &= \frac{56\sqrt{5} - 18\sqrt{70} + 20\sqrt{5}}{560 - 250} \\ &= \frac{76\sqrt{5} - 18\sqrt{70}}{310}\end{aligned}$$

PTS: 1

21. ANS:

$$\begin{aligned}\frac{2\sqrt{21} - \sqrt{14}}{-4\sqrt{21} - 3\sqrt{14}} &= \frac{-8\sqrt{441} - 6\sqrt{294} + 4\sqrt{294} + 3\sqrt{196}}{16\sqrt{441} - 12\sqrt{294} + 12\sqrt{294} + 9\sqrt{196}} \\ &= \frac{-24\sqrt{49} - 2\sqrt{294} + 6\sqrt{49}}{336 - 126} \\ &= \frac{-18\sqrt{49} - 2\sqrt{294}}{210}\end{aligned}$$

PTS: 1

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22. ANS:

$$\begin{aligned} \frac{-\sqrt{7}}{-\sqrt{7}-\sqrt{5}} &= \frac{\sqrt{49}+\sqrt{35}}{\sqrt{49}-\sqrt{35}+\sqrt{35}+\sqrt{25}} \\ &= \frac{7\sqrt{1}+\sqrt{35}}{7-5} \\ &= \frac{7\sqrt{1}+\sqrt{35}}{2} \end{aligned}$$

PTS: 1

23. ANS:

$$\begin{aligned} \frac{-\sqrt{10}-5\sqrt{15}}{4\sqrt{2}-3\sqrt{3}} &= \frac{-4\sqrt{20}+3\sqrt{30}-20\sqrt{30}+15\sqrt{45}}{16\sqrt{4}+12\sqrt{6}-12\sqrt{6}+9\sqrt{9}} \\ &= \frac{-8\sqrt{5}-17\sqrt{30}+45\sqrt{5}}{32-27} \\ &= \frac{37\sqrt{5}-17\sqrt{30}}{5} \end{aligned}$$

PTS: 1

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