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Math worksheet on *'Radicals - Adding and Subtracting (Values and Variables) (Level 5)'*. Part of a broader unit on *'Radicals - Addition and Subtraction Intro'*

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1 Simplify, then add or subtract the radical expressions

$$\sqrt{175m^2} + \sqrt{63m^2} - \sqrt{175m^3c}$$

a $m\sqrt{7} + 5m\sqrt{7mc}$	**b** $8m\sqrt{7} + 5m\sqrt{7mc}$
c $8m^{-1}\sqrt{7} + 5m\sqrt{7mc}$	**d** $3m\sqrt{4} + 6m^3\sqrt{7} - m\sqrt{6m^3c}$
e $6m^3\sqrt{3} + 3m^2\sqrt{7} - 6m\sqrt{5m^2c}$	**f** $5m\sqrt{7} + 5m\sqrt{7mc}$

2
$$\sqrt[3]{704m^4} + \sqrt[3]{297r^4m^4} - \sqrt[3]{88r^4m^3}$$

Simplify, then add or subtract the radical expressions

a	b	c	d	e	f
$2m\sqrt[3]{11m} + r^3m\sqrt[3]{7rm} - 3rm\sqrt[3]{10r}$	$4m\sqrt[3]{14m} + 4r^3m^2\sqrt[3]{11rm^2} - r^2m^2\sqrt[3]{9r}$	$4m\sqrt[3]{11m} + 3rm\sqrt[3]{11rm} - 2rm\sqrt[3]{11r}$	$m^3\sqrt[3]{9m} + 5rm\sqrt[3]{14rm} - rm^2\sqrt[3]{14r}$	$3m\sqrt[3]{10m} + 6r^2m\sqrt[3]{14rm} - r^3m^2\sqrt[3]{10r^2}$	$3m^3\sqrt[3]{10m^3} + rm\sqrt[3]{7rm^3} - r^2m\sqrt[3]{14r}$

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3 Simplify, then add or subtract the radical expressions

$$\sqrt[3]{16r^2m} + \sqrt[3]{54rm^4} - \sqrt[3]{54r^3m^2}$$

a $\sqrt[3]{r^2m} + 4m\sqrt[3]{2rm} - r^3\sqrt[3]{5m^3}$	**b** $3\sqrt[3]{4r^3m} + m\sqrt[3]{rm^2} - r\sqrt[3]{m}$
c $\sqrt[3]{2r^2m} + 3m\sqrt[3]{2rm} - 3r\sqrt[3]{2m^2}$	**d** $\sqrt[3]{5r^3m} + 2m\sqrt[3]{5rm} - r^3\sqrt[3]{2m}$
e $5\sqrt[3]{r^3m^3} + 2m^2\sqrt[3]{rm^3} - r\sqrt[3]{m}$	

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4 Simplify, then add or subtract the radical expressions

$$\sqrt{18} + \sqrt{18z^2p^3} + \sqrt{32p^4}$$

a $3\sqrt{2} + 3zp\sqrt{2p} + 4p^2\sqrt{2}$	**b** $\sqrt{5} + 5z^2p\sqrt{p} + p\sqrt{2}$
c $1 + 5zp\sqrt{p} + p^2$	**d** $5 + 5zp\sqrt{p^2} + 6p$
e $6 + 6zp\sqrt{5p^2} + 3p\sqrt{3}$	**f** $3 + 2zp\sqrt{p} + 3p^3\sqrt{3}$

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5 Simplify, then add or subtract the radical expressions

$$\sqrt{63c} - \sqrt{28c^2z^2} + \sqrt{112c^2z^3}$$

a $2\sqrt{10c} - 5c^2z\sqrt{5} + c^3z\sqrt{6z}$	**b** $\sqrt{6c} - c^3z\sqrt{9} + 4cz^3\sqrt{8z}$
c $3\sqrt{7c} - cz^2\sqrt{6} + 4cz\sqrt{10z^2}$	**d** $3\sqrt{7c} - 2cz\sqrt{7} + 4cz\sqrt{7z}$
e $\sqrt{8c^2} - cz\sqrt{6} + 4cz^2\sqrt{10z}$	**f** $3\sqrt{5c^2} - cz\sqrt{10} + 3c^2z^2\sqrt{9z}$

6
$$\sqrt[3]{81x^3n^4} - \sqrt[3]{192xn^2} + \sqrt[3]{24x^4n^3}$$

Simplify, then add or subtract the radical expressions

a	b	c	d	e	f
$3xn^2\sqrt[3]{2n^3} - 6\sqrt[3]{2xn^4} + xn^2\sqrt[3]{2z}$	$x^3\sqrt[3]{n} - 4\sqrt[3]{6x^3n} + 2x^2n\sqrt[3]{x^2}$	$3zn\sqrt[3]{3n} - 4\sqrt[3]{3zn^2} + 2xn\sqrt[3]{3x}$	$5xn\sqrt[3]{6n^3} - 4\sqrt[3]{5xn^2} + xn^3\sqrt[3]{6x^2}$	$xn^3\sqrt[3]{n^3} - 2\sqrt[3]{xn^3} + 5x^2n^2\sqrt[3]{2x}$	$xn\sqrt[3]{n} - 3\sqrt[3]{xn} + xn\sqrt[3]{2x}$

7
$$\sqrt[3]{448p^3} + \sqrt[3]{189p^2x^3} - \sqrt[3]{56p^2x^3}$$

Simplify, then add or subtract the radical expressions

a	b	c	d	e	f
$4p\sqrt[3]{7} + 4x\sqrt[3]{7p^2}$	$7p^3\sqrt[3]{3} + 2x\sqrt[3]{8p} - x^2\sqrt[3]{7p^3}$	$6p\sqrt[3]{8} + x\sqrt[3]{7p} - 2x^3\sqrt[3]{10p^2}$	$4p\sqrt[3]{7} + 5x\sqrt[3]{7p^2}$	$7p^2\sqrt[3]{4} + x\sqrt[3]{9p^3} - x\sqrt[3]{8p^2}$	$4p\sqrt[3]{7} + x\sqrt[3]{7p^2}$