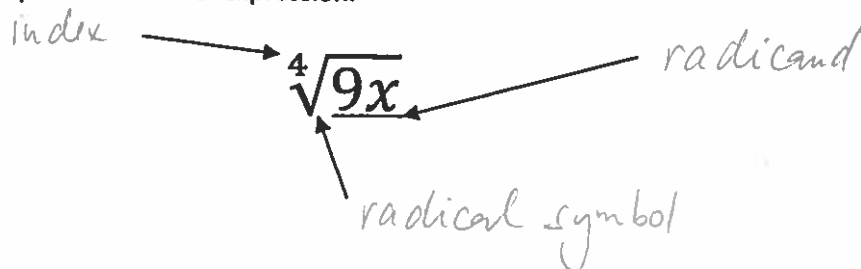


[3] 1. Label all the indicated parts of a radical expression:



[8] 2. Express mixed radicals as entire radicals:

<p>-index 2 $(6x^3)\sqrt{4x}$</p> $= \sqrt{4x(6x^3)^2} = \sqrt{4x(36)x^6}$ $= \sqrt{144x^7}$	<p>-index 3 $(4x^5)\sqrt[3]{2x^2}$</p> $= \sqrt[3]{(4x^5)^3(2x^2)} = \sqrt[3]{64x^{15} \cdot 2x^2}$ $= \sqrt[3]{128x^{17}}$
<p>-index 3 $(5ay^2)\sqrt[3]{y}$</p> $= \sqrt[3]{(5ay^2)^3 y} = \sqrt[3]{125a^3 y^6 y}$ $= \sqrt[3]{125a^3 y^7}$	<p>index 2 $(4a^5b^3)\sqrt{2ab}$</p> $= -\sqrt{(4a^5b^3)^2 2ab} = -\sqrt{16a^{10}b^6 2ab}$ $= -\sqrt{32a^{11}b^7}$

[8] 3. Express entire radicals as mixed radicals if possible. If not possible, state why.

<p>-index 3 $\sqrt[3]{54x^4}$</p> $= \sqrt[3]{2 \cdot 3^3 x^3 \cdot x}$ $= 3x \sqrt[3]{2x}$	<p>index 2 $\sqrt{2a^3b^6}$</p> $= \sqrt{2a^2 a b^2 b^2 b^2}$ $= ab^3 \sqrt{2a}$
<p>-index 2 $\sqrt{144xb^3}$</p> $= \sqrt{12^2 x b^2 b}$ $= 12b \sqrt{xb}$	<p>index 4 $\sqrt[4]{80a^7b^4}$</p> $= \sqrt[4]{5 \cdot 2^4 a^4 a^3 b^4}$ $= 2ab \sqrt[4]{5a^3}$

[12] 4. Simplify, add and subtract when possible. Show your work.

$$2\sqrt{48x^3} + 5x\sqrt{27x}$$

$$= 2 \cdot \sqrt{3 \cdot 4^2 \cdot x^2 \cdot x} + 5x \cdot \sqrt{3 \cdot 3^2 \cdot x}$$

$$= 8x\sqrt{3x} + 15x\sqrt{3x}$$

$$= \boxed{23x\sqrt{3x}}$$

! $x \geq 0$

$$-\sqrt{5x} + 6\sqrt{5x^3} + \sqrt[3]{125x}$$

$$= -\sqrt{5x} + 6x\sqrt{5x} + 5\sqrt{5x}$$

$$= 4\sqrt{5x} + 6x\sqrt{5x}$$

$$= \sqrt{5x} (4 + 6x)$$

$$= \underline{\underline{2\sqrt{5x} (2 + 3x)}}$$

! $x \geq 0$

$$-a^3\sqrt{ab} - 7a^3\sqrt{ab}$$

$$= \underline{\underline{-8a^3\sqrt{ab}}}$$

! no restrictions

$$\sqrt{147c} + \sqrt{108c} - \sqrt{3c^5}$$

$$= \sqrt{7^2 \cdot 3c} + \sqrt{6^2 \cdot 3c} - \sqrt{3c^2 c^2 c}$$

$$= 7\sqrt{3c} + 6\sqrt{3c} - c^2\sqrt{3c}$$

$$= 13\sqrt{3c} - c^2\sqrt{3c}$$

$$= \underline{\underline{\sqrt{3c} (13 - c^2)}}$$

! $c \geq 0$