

5.0 Variable Skills

$$\begin{aligned} (x)(x) &= x^2 \\ \sqrt{x^2} &= x \\ \sqrt{x^2} &= (x^2)^{1/2} \\ &= x \end{aligned}$$

1. $\sqrt{64x^3}$

square

$$\sqrt{64x^2}$$

$$\boxed{8x\sqrt{x}}$$

left over

$$\sqrt{x}$$

$$\sqrt{(64x^2)(x)}$$

2. $\sqrt{72m^3}$

square

$$\sqrt{36m^2}$$

$$= 6m\sqrt{2m}$$

(left over)

$$\sqrt{2m}$$

$$\begin{array}{r} 4 \\ 9 \\ 16 \\ 25 \\ 36 \end{array}$$

5.0 Variable Skills

3. $\sqrt{80x^4}$

square

$$\sqrt{16x^4}$$

$$4x^2\sqrt{5}$$

left over

$$\sqrt{5}$$

$$\begin{aligned} \dots \sqrt{x^4} &= (x^4)^{1/2} \\ (x^2)(x^2) &= x^4 \\ \sqrt{x^4} &= x^2 \\ (5)(5) &= 25 \\ \sqrt{25} &= 5 \end{aligned}$$

4. $\sqrt{48n^5}$

$$(n)(n)(n)(n)(n)$$

$$\sqrt{16n^4} \sqrt{3n}$$

$$4n^2\sqrt{3n}$$

5.0 Variable Skills

$$\begin{aligned} 5. \quad & \sqrt{128x^6} && \boxed{(x)(x)} \boxed{(x)(x)} \boxed{(x)(x)} \\ & \sqrt{64x^6} \sqrt{2} \\ & 8x^3\sqrt{2} \end{aligned}$$

$$\begin{aligned} 6. \quad & \sqrt{80x^5} && \boxed{(x)(x)(x)} \boxed{(x)(x)} \\ & \sqrt{16x^4} \sqrt{5x} \\ & 4x^2\sqrt{5x} \end{aligned}$$

$$7. \quad \sqrt{16x^2} = 4x \quad \text{no leftovers}$$

5.0 Variable Skills

$$3 \times 3 \times 3 = 27$$

8. $\sqrt[3]{54x^4}$ $\boxed{xxx}x$

cubes left over

$$\sqrt[3]{27x^3} \quad \sqrt[3]{2x}$$

$$3x \sqrt[3]{2x}$$

9. $\sqrt[3]{125m^5}$ $\boxed{(xxx)(xx)}$

cube left over

$$\sqrt[3]{125m^3} \quad \sqrt[3]{m^2}$$

$$5m \sqrt[3]{m^2}$$

10 $\sqrt[3]{72n^9}$ $\boxed{nnn} \boxed{nnn} \boxed{nnn}$

exact left over

$$\sqrt[3]{8n^9} \quad \sqrt[3]{9}$$

$$2n^3 \sqrt[3]{9}$$