

Surds lesson 6 - Binomial Expansion

Wednesday, January 01, 2014

6:40 PM

$$\begin{aligned} \text{Simplify } \sqrt{a^3 b^4} \times \sqrt{a^2 y^2} \\ &= \sqrt{a^3} \times \sqrt{b^4} \times \sqrt{a^2} \times \sqrt{y^2} \\ &= \sqrt{a} \times \sqrt{a} \times \cancel{b} \times \cancel{b} \times \cancel{a} \times y \\ &= a^2 b^2 y \sqrt{a} \end{aligned}$$

$$\begin{aligned} \sqrt{3} (\sqrt{2} + 7) \\ &= 2\sqrt{3} + 7\sqrt{3} \end{aligned}$$

$$\begin{aligned} a(b+c) &= ab + ac \\ \sqrt{a}(\sqrt{b} + \sqrt{c}) \\ &= \sqrt{ab} + \sqrt{ac} \end{aligned}$$

$$\sqrt{7}(\sqrt{10} + \sqrt{2})$$

$$= \sqrt{70} + \sqrt{14}$$

$$\text{Expand } 2\sqrt{3}(-\sqrt{10} - 5\sqrt{3})$$

$$= -2\sqrt{30} - 10\sqrt{3}$$

$$= -2\sqrt{30} - 30$$

$$(a+b)(c+d) = ac + ad + bc + bd$$

$$\begin{aligned} (7\sqrt{2} - 3\sqrt{5})(7\sqrt{2} + 3\sqrt{5}) \\ &= 49\sqrt{2}^2 + 21\sqrt{10} - 21\sqrt{10} - 9\sqrt{25}^2 \\ &= 98 + \cancel{21\sqrt{10}} - \cancel{21\sqrt{10}} - 45 \\ &= 53 \end{aligned}$$

$$\begin{aligned} (3\sqrt{2} + 5\sqrt{3})(4\sqrt{7} - 5\sqrt{6}) \\ &= 12\sqrt{14} - 15\sqrt{12} + 20\sqrt{21} - 25\sqrt{18} \\ &= 12\sqrt{14} - 15\sqrt{3}^2 + 20\sqrt{21} - 25\sqrt{2}^3 \\ &= 12\sqrt{14} - 30\sqrt{3} + 20\sqrt{21} - 75\sqrt{2} \end{aligned}$$