6) $\frac{\sqrt{g^{30}}\sqrt{g}}{\sqrt{g^3}\sqrt{g^7}} = \frac{\sqrt{g^{30}\cdot g^1}}{\sqrt{g^3\cdot g^7}} =$

$\sqrt{a}\cdot\sqrt{b} = \sqrt{a\cdot b}$

$= \frac{\sqrt{g^{31}}}{\sqrt{g^{10}}} = \sqrt{\frac{g^{31}}{g^{10}}} = \boxed{\sqrt{g^{21}}}$

7) $\dfrac{\sqrt[3]{x^5}\cdot\sqrt[3]{x^{12}}}{\sqrt[3]{x^2}} = \sqrt[3]{\dfrac{x^5\cdot x^{12}}{x^2}} =$

$= \sqrt[3]{x^{15}}$

8) $(2\sqrt{3}+\sqrt{5})^2 = (2\sqrt{3})^2 + 2\cdot 2\sqrt{3}\cdot\sqrt{5} + (\sqrt{5})^2 =$

$= \overset{12}{\cancel{4\cdot 3}} + 4\sqrt{15} + 5 = \boxed{17+4\sqrt{15}}$

9) $(\sqrt{5}-\sqrt{2})^2 \cdot (7+2\sqrt{10}) =$

$\underbrace{(\sqrt{5})^2 - 2\cdot\sqrt{5}\cdot\sqrt{2} + (\sqrt{2})^2}\,(7+2\sqrt{10}) =$

$5 - 2\sqrt{10} + 2$

$(7-2\sqrt{10})(7+2\sqrt{10}) = (7)^2 - (2\sqrt{10})^2 = 49 - 40 = \boxed{9}$

$a - b \qquad a + b$

10) $(\sqrt{11}-\sqrt{3})^2(14+2\sqrt{33})=$

$=(11-2\sqrt{33}+3)(14+2\sqrt{33})=$

$=(14-2\sqrt{33})(14+2\sqrt{33})=(14)^2-(2\sqrt{33})^2=$

($a-b$ $\quad$ $a+b$)

$=196-4\cdot 33=196-132=\boxed{64}$

11) $(\underset{a}{\sqrt{2}} - \underset{b}{\sqrt{3}})^2 \cdot (\underset{a}{\sqrt{2}} + \underset{b}{\sqrt{3}})^2 = (\sqrt{2}^2 - 2\cdot\sqrt{2}\cdot\sqrt{3} + \sqrt{3}^2) \cdot (\sqrt{2}^2 + 2\cdot\sqrt{2}\cdot\sqrt{3} + \sqrt{3}^2)$

$= (5 - 2\cdot\sqrt{6}) \cdot (5 + 2\cdot\sqrt{6}) = 5^2 - (2\cdot\sqrt{6})^2 = 25 - 4\cdot 6$

$= 25 - 24$

$= 1$

12) $\sqrt{(2-\sqrt{3})^2} + \sqrt{(\sqrt{3}+2)^2} =$

$\sqrt{x^2}$

$= |2-\sqrt{3}| + |\sqrt{3}+2| =$

>0 $\quad$ >0

$= 2 - \sqrt{3} + \sqrt{3} + 2 = \boxed{4}$