

1) $\frac{2\sqrt{2}-\sqrt{3}}{2\sqrt{2}+\sqrt{3}} \cdot \frac{2\sqrt{2}+\sqrt{3}}{2\sqrt{2}+\sqrt{3}} = \frac{8-4\sqrt{6}+3}{8-3} = \frac{11-4\sqrt{6}}{5}$ $\frac{10\sqrt[3]{2}}{\sqrt[3]{2^2}\sqrt[3]{2}} = \frac{10\sqrt[3]{2}}{\sqrt[3]{2}} = 5\sqrt[3]{2}$

$\sqrt[3]{2} - 3\sqrt[3]{2} - 4\sqrt[3]{2} = -6\sqrt[3]{2}$ $\sqrt[5]{2^3}\sqrt[2]{2^3} = \sqrt[10]{2^6 \cdot 2^{15}} = \sqrt[10]{2^{21}} = 4\sqrt[10]{2}$

2) a) $\log_{27} 9^{2x+1} = 2 \rightarrow 9^{2x+1} = 27^2 \rightarrow 3^{4x+2} = 3^6 \rightarrow 4x+2=6 \rightarrow \boxed{x=1}$

b) $\log_x 27 = 3 \rightarrow x^3 = 27 \rightarrow x = \sqrt[3]{27} = \boxed{x=3}$

3) $\log \frac{\sqrt{B}}{10A} = \frac{1}{2} \log B - 1 - \log A$ $\log \frac{B^3}{1A} = \log A^2 - 3 \log B - \frac{1}{2} \log A - 2 \log A = \boxed{3 \log B - \frac{5}{2} \log A}$

4) a) $x(x^2+4x+4) = \boxed{x(x+2)^2}$

b) $x^4 - 2x^3 - 3x^2 + 4x + 4 = \boxed{(x-2)^2(x-1)^2}$

c) $x(x^4+3x^3-9x^2-23x-12) =$

$\boxed{x(x+1)^2(x-3)(x+4)}$

1	-2	-3	4	4
2	2	0	-6	-4
1	0	-3	-2	0
-1	-1	1	2	
1	-1	-2		0
-1	-1	3		
1	-2			0

1	3	-9	-23	-12
-1	-1	-2	11	12
1	2	-11	-12	0
-1	-1	-1	12	
1	1	-12		0
3	3	12		
1	4			0

5) $\frac{x+1}{x-1} + \frac{2x+1}{x+2} - \frac{6}{(x-1)(x+2)} = \frac{(x+1)(x+2) + (2x+1)(x-1) - 6}{(x-1)(x+2)}$

a) $= \frac{x^2+3x+2+2x^2-x-1-6}{(x-1)(x+2)} = \frac{3x^2+2x-5}{(x-1)(x+2)}$

b) $\frac{3}{(x+1)^2} - \frac{2}{x+1} + \frac{x}{x+1} = \frac{3-2(x+1)+x(x+1)}{(x+1)^2} = \frac{3-2x-2+x^2+x}{(x+1)^2} = \frac{x^2-x+1}{(x+1)^2}$

6) a) $\frac{(x+3)^2}{(x+3)(x-3)} \cdot \frac{x-3}{x+3} = \boxed{1}$

b) $\frac{(x-2)(x-1)(x-2)}{(x+1)(x-1)(x-2)^2} = \frac{1}{x+1}$

1	-1	-17	-15
2	2	2	-30
1	1	-15	-45

Resultado $= x^2+x-15 = \frac{45}{x-2}$