CORREZIONE ESERCITAZIONE A

53) $\sqrt{27}+\sqrt{20}-\sqrt{12}-\sqrt{5}=3\sqrt{3}+2\sqrt{5}-2\sqrt{3}-\sqrt{5}=\boxed{\sqrt{3}+\sqrt{5}}$

54) $\dfrac{\sqrt[4]{x^3}\cdot\sqrt{x}}{x}=\dfrac{\sqrt[4]{x^3\cdot x^2}}{x}=\dfrac{\sqrt[4]{x^5}}{x}=\dfrac{\cancel{x}\sqrt[4]{x}}{\cancel{x}}=\boxed{\sqrt[4]{x}}$

55) $\sqrt[3]{\dfrac{\left(a^2-a\right)^2}{a^2}}:\sqrt{a-1}=\sqrt[3]{\dfrac{\cancel{a^2}\left(a-1\right)^2}{\cancel{a^2}}}\cdot\sqrt{\dfrac{1}{a-1}}=\sqrt[6]{(a-1)^{\cancel{4}}\cdot\dfrac{1}{\cancel{(a-1)^3}}}=\boxed{\sqrt[6]{a-1}}$

56) $\dfrac{\sqrt{2}\cdot\sqrt[3]{5}}{\sqrt[6]{200}}=\dfrac{\sqrt[6]{2^3\cdot 5^2}}{\sqrt[6]{200}}=\dfrac{\sqrt[6]{8\cdot 25}}{\sqrt[6]{200}}=\sqrt[6]{\dfrac{200}{200}}=\sqrt[6]{1}=\boxed{1}$

57) $\sqrt{9a^3-9a^2}-\left(\sqrt{4a^3-4a^2}+\sqrt{a^3-a^2}\right)=\sqrt{9a^2\left(a-1\right)}-\sqrt{4a^2\left(a-1\right)}-\sqrt{a^2\left(a-1\right)}=$
$=3a\sqrt{a-1}-2a\sqrt{a-1}-a\sqrt{a-1}=\boxed{0}$

58) $\sqrt[4]{\left(x+\sqrt{2x-1}\right)\cdot\left(x-\sqrt{2x-1}\right)}=\sqrt[4]{x^2-2x+1}=\sqrt[4]{\left(x-1\right)^2}=\boxed{\sqrt{x-1}}$

59) $\left(\sqrt{2}+1\right)^3=\left(\sqrt{2}\right)^3+3\cdot\left(\sqrt{2}\right)^2\cdot 1+3\cdot\sqrt{2}\cdot 1^2+1^3=$
$=\sqrt{2^3}+3\cdot 2\cdot 1+3\cdot\sqrt{2}\cdot 1+1=2\sqrt{2}+6+3\sqrt{2}+1=\boxed{5\sqrt{2}+7}$

60) $\dfrac{1}{96}\left(\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}-\dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}\right)^2=\dfrac{1}{96}\left[\dfrac{\left(\sqrt{3}+\sqrt{2}\right)^2-\left(\sqrt{3}-\sqrt{2}\right)^2}{\left(\sqrt{3}-\sqrt{2}\right)\left(\sqrt{3}+\sqrt{2}\right)}\right]^2=\dfrac{1}{96}\left[\dfrac{3+2+2\sqrt{6}-\left(3+2-2\sqrt{6}\right)}{1}\right]^2=$
$=\dfrac{1}{96}\left(\cancel{3+2}+2\sqrt{6}\cancel{-3-2}+2\sqrt{6}\right)^2=\dfrac{1}{96}\left(4\sqrt{6}\right)^2=\dfrac{1}{\cancel{96}_{6}}\cdot\cancel{16}\cdot\cancel{6}^{1}=\boxed{1}$

61) $\dfrac{x}{\sqrt[3]{x^2}}\cdot\dfrac{\sqrt[3]{x}}{\sqrt[3]{x}}=\dfrac{\cancel{x}\sqrt[3]{x}}{\cancel{x}}=\boxed{\sqrt[3]{x}}$ oppure: $\dfrac{x}{\sqrt[3]{x^2}}=\dfrac{\sqrt[3]{x^3}}{\sqrt[3]{x^2}}=\sqrt[3]{x}$

62) $\dfrac{\sqrt{2}}{\sqrt{3}+\sqrt{2}-1}=\dfrac{\sqrt{2}}{\sqrt{3}+\left(\sqrt{2}-1\right)}\cdot\dfrac{\sqrt{3}-\left(\sqrt{2}-1\right)}{\sqrt{3}-\left(\sqrt{2}-1\right)}=$
$=\dfrac{\sqrt{2}\left(\sqrt{3}-\sqrt{2}+1\right)}{3-\left(2+1-2\sqrt{2}\right)}=\dfrac{\sqrt{2}\left(\sqrt{3}-\sqrt{2}+1\right)}{\cancel{3-2-1}+2\sqrt{2}}=\dfrac{\cancel{\sqrt{2}}\left(\sqrt{3}-\sqrt{2}+1\right)}{2\cancel{\sqrt{2}}}=\boxed{\dfrac{\sqrt{3}-\sqrt{2}+1}{2}}$

63) $\dfrac{\sqrt{19-6\sqrt{2}}+\sqrt{17-12\sqrt{2}}}{\sqrt{2}}=\dfrac{\sqrt{\left(3\sqrt{2}-1\right)^2}+\sqrt{\left(3-2\sqrt{2}\right)^2}}{\sqrt{2}}=$
$=\dfrac{3\sqrt{2}-1+3-2\sqrt{2}}{\sqrt{2}}=\dfrac{\sqrt{2}+2}{\sqrt{2}}=\dfrac{\cancel{\sqrt{2}}\left(1+\sqrt{2}\right)}{\cancel{\sqrt{2}}}=\boxed{1+\sqrt{2}}$