Ex1 a) $\frac{2}{5} - \left(\frac{7}{10}\right)^2 : \frac{35}{4} = \frac{2}{5} - \frac{49}{100} \cdot \frac{4}{35} = \frac{2}{5} - \frac{7}{125} = \frac{50}{125} - \frac{7}{125}$

$\frac{7}{25} \cdot \frac{1}{5}$ $= \boxed{\frac{43}{125}}$

b) $(x - \frac{3}{5}) - 100 \cdot x^2$

for $x = -\frac{2}{5}$ $\left(-\frac{2}{5} - \frac{3}{5}\right) - 100 \cdot \left(-\frac{2}{5}\right)^2$

$= \left(-\frac{5}{5}\right) - \cancel{100}^{4} \cdot \frac{4}{\cancel{25}_{1}} = -1 - 16 = \boxed{-17}$

c) $\frac{3 + \frac{2}{a}}{-1 + \frac{1}{a}} = \left(\frac{3a}{a} + \frac{2}{a}\right) : \left(-\frac{a}{a} + \frac{1}{a}\right) = \frac{3a+2}{a} : \frac{-a+1}{a} =$

$\frac{3a+2}{\cancel{a}} \cdot \frac{\cancel{a}}{-a+1} = \boxed{\frac{3a+2}{-a+1}}$

d) $\frac{3}{2} - \frac{1+a}{4} = \frac{6}{4} - \frac{1+a}{4} = \frac{6-(1+a)}{4} = \boxed{\frac{5-a}{4}}$

e) $\sqrt[3]{8} \cdot \sqrt{64} = 2 \cdot 8 = \boxed{16}$

Ex2 a) $\frac{6}{\sqrt{3}} = \frac{6}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{6\sqrt{3}}{3} = \boxed{2\sqrt{3}}$

b) $\frac{1+\sqrt{3}}{3-\sqrt{3}} = \frac{1+\sqrt{3}}{3-\sqrt{3}} \cdot \frac{3+\sqrt{3}}{3+\sqrt{3}} = \frac{3+\sqrt{3}+3\sqrt{3}+3}{9-3} = \frac{6+4\sqrt{3}}{6} = \boxed{\frac{3+2\sqrt{3}}{3}}$

c) $\sqrt{18} - \sqrt{50} = \sqrt{2 \cdot 9} - \sqrt{2 \cdot 25} = 3\sqrt{2} - 5\sqrt{2} = \boxed{-2\sqrt{2}}$

Ex3 a) $\frac{1}{\sqrt[4]{c^5}} = c^{-5/4}$ b) $\sqrt{a} : \sqrt[3]{a} = a^{1/2} : a^{1/3} = a^{\frac{1}{2}-\frac{1}{3}} = a^{\frac{1}{6}} = \underline{\sqrt[6]{a}}$

c) $\frac{(a^2)^3}{a^{-4}} = \frac{a^6}{a^{-4}} = a^{6-(-4)} = \boxed{a^{10}}$

d) $(e^2 f^{-4})^3 : (\sqrt[3]{e^{-6} \cdot f^2})^2$

$(e^6 f^{-12}) : (e^{-2} f^2)^2$

$(e^6 f^{-12}) : (e^{-4} f^4)$

$= e^{6-(-4)} \cdot f^{-12-4} = e^{10} f^{-16} = \boxed{\frac{e^{10}}{f^{16}}}$

Ex4 1) a) $x^2 + 14x + 49 = (x+7)^2$

b) $9x^2 - 48x + 64 = (3x-8)^2$

2) a) $x^3 - 4x = 0 \mid F$

$x(x^2-4) = 0 = x \cdot (x-2)(x+2)$

$S = \{0; -2; 2\}$

b) $(x+7)(2x-3) = 0$ $S = \{-7; \frac{3}{2}\}$

3) $(2x+1)x^2 - 25(1+2x)$ $S = \{-\frac{1}{2}; 5; -5\}$

$= (2x+1) \cdot (x^2-25) = (2x+1)(x-5)(x+5)$