**Exercise 1:** **(3.25 points)** Work out the value of the following expressions and simplify if possible:

a) $\dfrac{x^2-9}{x^2-1}:\dfrac{x^2-6x+9}{x^2-2x+1}=$ (1)

b) $\dfrac{x^2-10x+25}{9x^4-45x^3}\cdot\dfrac{3x^3+15x^2}{x^2-25}=$ (1)

c) $\dfrac{x^3-2x^2-13x-10}{x^3-4x^2-5x}=$ (1.25)

**Exercise 2:** **(0.5 points)** Find the value of $k$ so that the polynomial $P(x)=x^4+kx^3-5x^2+6x$ is a multiple of $(x-2)$

**Exercise 3:** **(1.25 points)** Rationalize the following expressions:

a) $\dfrac{35}{\sqrt[9]{7^6}}=$

b) $\dfrac{3}{\sqrt{3}}=$

c) $\dfrac{\sqrt{7}+\sqrt{2}}{\sqrt{7}-\sqrt{2}}=$

**Exercise 4:** **(0.75 points)** Find the percentage error when rounding $\sqrt{7}$ to the nearest thousandths

**Exercise 5:** **(1 point)** Study the following unions and intersections of intervals and **write them as inequalities** too:

a) $(-\infty,2]\cup[1,7)=$

b) $(-5,-2]\cap(-3,1]=$

**Exercise 6:** **(1 point)** Solve and factorize the equation $P(x)=x^5+x^4-34x^3-34x^2+225x+225$

**Exercise 7:** **(2.25 points)** Work out, express as a single radical and simplify if possible:

a) $\sqrt{405}-7\sqrt{320}+2\sqrt{125}=$

b) $\dfrac{\sqrt[6]{2^5\cdot 7^{-3}}}{\sqrt[5]{7^{-4}\cdot 2^3}}=$

c) $\left(\sqrt[5]{x^{-4}}:\sqrt{x^5}\right)\cdot\left(\sqrt[3]{x^2}:\sqrt[7]{x^{-3}}\right)=$