Exercise 1: **(0.5 points)** Find the value of k so that when dividing the polynomial $P(x) = kx^3 - x^2 + 3x - 2$ by $(x+2)$ the remainder is 17

Exercise 2: (1 point) Solve and factorize the equation $P(x) = x^5 + 10x^4 + 33x^3 + 44x^2 + 20x$

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

a) $\dfrac{10}{\sqrt{5}} =$

b) $\dfrac{14}{\sqrt[7]{7^2}} =$

c) $\dfrac{5 + \sqrt{7}}{5 - \sqrt{7}} =$

Exercise 4: (3.25 points) Work out the value of the following expressions and simplify if possible:

a) $\dfrac{x^2 - 16}{x^2 + 2x + 1} \cdot \dfrac{x^2 - 1}{x^2 - 5x + 4} =$ (1)

b) $\dfrac{5x^2 - 10x}{10x^2 - 90} : \dfrac{x^2 + x - 6}{x^2 + 6x + 9} =$ (1)

c) $\dfrac{x^4 - 13x^2 + 36}{x^3 + x^2 - 6x} =$ (1.25)

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

a) $(-3, 7] \cup [1, 4) =$

b) $(-\infty, 0] \cap [0, 1] =$

Exercise 6: (2.25 points) Work out, express as a single radical and simplify if possible:

a) $5 \cdot \sqrt[3]{192} + \sqrt[3]{648} - 2 \cdot \sqrt[3]{1029} =$ (0.75)

b) $\dfrac{\sqrt{3 \cdot 5^{-4}} \cdot \sqrt[3]{3^{-2}}}{\sqrt[5]{5^3}} =$ (1)

c) $\sqrt[3]{y^{-7}} \cdot \sqrt{y^3} : \sqrt[5]{y^{-1}} =$ (0.5)

Exercise 7: (0.75 points) A certain company promises that they will give you the money back if an order arrives a 15% later than the estimated delivery time. I ordered a book and they told me that it would take it three weeks to come home to me, but it actually needed 24 days. Am I getting my money back? Find the percentage error to explain your answer.