Exercise 1: (1.5 ptos) If $P(x) = 3x^2 - 5x + 2$, $Q(x) = -x^2 + 7x - 9$ and $R(x) = 2x - 7$ work out:

a) $P + Q = 2x^2 + 2x - 7$

b) $P - Q = 4x^2 - 12x + 11$

c) $P \cdot R = 6x^3 - 31x^2 + 39x - 14$

Exercise 2: (2 ptos) Work out using quadratic multiplication formulas:

a) $(x+5)^2 = x^2 + 10x + 25$

b) $(5a - 2b)^2 = 25a^2 - 20ab + 4b^2$

c) $(4x^5 - 3)(4x^5 + 3) = 16x^{10} - 9$

d) $(5y^4 - y^3)^2 = 25y^8 - 10y^7 + y^6$

Exercise 3: (1.75 ptos) Work out:

a) $5(2x-1) - (x-5) = 21x - 4(3x-2)$ → $\nexists$ solution

b) $\dfrac{5x-2}{4} - \dfrac{x-4}{3} = 1 - \dfrac{5-3x}{2}$ → $\boxed{x = 4}$

c) $\dfrac{7-2x}{3x+2} = \dfrac{5}{2}$ → $\boxed{x = \dfrac{4}{19}}$

Exercise 4: (1.25 ptos) My fridge is empty again, I still didn't find the way to live without eating, so I'm going to the store again. A kilo of melon is 2€ cheaper than a kilo of grapes, and if a melon that weighs four kilos and two kilos of grapes, I have to pay thirteen euro. What's the price of a kilo of each product?
  A kilo of grapes costs 3.5€ while a kilo of melon costs 1.5€

Exercise 5: (1 pto) In an isosceles triangle the base is eight cm less than the equal sides, and the perimeter measures fifty-five cm. Find its dimensions.   The equal sides measure 21 cm and the base, 13 cm

Exercise 6: (1.5 ptos) Take out common factors:

a) $18x^2y^5 - 9x^2y^3 - 27x^7y^3 = 9x^2y^3(2y^2 - 1 - 3x^5)$

b) $3x^6 - 9x^5 - 27x^4 + 12x^3 = 3x^3(x^3 - 3x^2 - 9x + 4)$

c) $uvw^3 + uv^3w + u^3vw = uvw(w^2 + v^2 + u^2)$

Exercise 7: (1 pto) Evaluate the polynomial $P(x) = 2x^3 - 5x^2 - 7x + 1$ when $x = -2$ and when $x = 3$

$P(-2) = -21$

$P(3) = -11$