Exercise 1: Solve:
$$\left.\begin{array}{l} 2x - y = 7 \\ x^2 + 2y^2 = 43 \end{array}\right\}$$

Exercise 2: Solve:
$$\left.\begin{array}{l} x^2 - 5x + 4 > 0 \\ 4 - x^2 \geq 0 \end{array}\right\}$$

Exercise 3: Find the domain of the following functions:

a) $f(x) = \dfrac{x^3 - 4x^2 + 8}{x^2 + x - 6}$

b) $f(x) = \dfrac{2}{\sqrt{x-5}}$

Exercise 4: Work out:

a) $\lim\limits_{x \to 5} \dfrac{x^2 - 2x - 15}{x^2 - 25} =$

b) $\lim\limits_{x \to \infty} \left(\dfrac{x^2 + 7x}{x - 2} - x \right) =$

Exercise 5: Work out: $\log_5 \dfrac{\sqrt{125} \cdot \sqrt[3]{625}}{\sqrt[7]{5}} =$

Exercise 6: If $\tan \alpha = 2.15$ and $\pi < \alpha < \dfrac{3\pi}{2}$ find the values of $\cos \alpha$, $\sin \alpha$ and the angle α

Exercise 7: Given the vectors $\vec{u} = (-3,5)$, $\vec{v} = (2,5)$ and $\vec{w} = (3,20)$ write $\vec{w}$ as a linear combination of $\vec{u}$ and $\vec{v}$

Exercise 8: Find the parametric, continuous and general equations of the straight line that goes through the points $A(5,-1)$ and $B(8,3)$

Exercise 9: 85% of my students decided to get a calculator from a known brand, while the rest bought theirs at a five-and-dime store. When falling to the ground, 2% of the quality calculators and 27% of the cheap ones stop working. Taking a random calculator from one of my students find the probability that:

    a) It is a cheap one and it will break if it crashes against the floor

    b) They have a good quality calculator, knowing that it flew out of my hands and still works

Exercise 10: Given two events A and B so that $P(A) = 0.65$, $P(\bar{B}) = 0.3$ and $P(A \cap B) = 0.4$

    a) $P(A \cup B) =$

    b) $P(A/B) =$

    c) Are A and B independent events? Why?