Classwork 13.A

Exercises

Caboara

Solve the following exercises.

1. **Polynomial gcd.** Compute, with the Euclidean algorithm, the gcd of
$$A(x) = x^3 + x^2 - x - 1 \qquad \text{and} \qquad B(x) = x^3 - x^2 - x + 1$$
2. **Polynomial equations.** Solve $2x^3 - 3x^2 - 3x + 2 = 0$.
3. **Parabolas.** For the parabola $y = x^2 + 2x - 8$ find the vertex, the points where it meets the coordinate axes, and draw it.
4. **Circles.** Write the equation of the circle passing through the points $O = (0, 0)$, $A = (6, 0)$ and $B = (0, 8)$, and find its center and radius.
5. **Exponential equations.** Solve $2^{2x+1} - 5 \cdot 2^x + 2 = 0$.
6. **Logarithmic equations.** Solve $\log_3(x + 2) + \log_3 x = 1$.
7. **Trigonometry.** Knowing that $\tan\alpha = \frac{3}{4}$ and $\pi < \alpha < \frac{3\pi}{2}$, compute $\sin\alpha$, $\cos\alpha$, $\sin 2\alpha$ and $\cos 2\alpha$.
8. **Trigonometric equations.** Solve $2\cos^2 x - \cos x = 0$.
9. **Trigonometric equations.** Solve $\sin x + \cos x = 1$ using the tangent of the half angle.
10. **Logarithms and trigonometry.** Solve $\log_2(1 + \cos x) + \log_2(1 - \cos x) = -2$.