Classwork 13.C

Exercises

Caboara

Solve the following exercises.

1. **Polynomial gcd.** Compute, with the Euclidean algorithm, the gcd of
$$A(x) = x^4 + x^2 + 1 \qquad \text{and} \qquad B(x) = x^3 - 1$$
2. **Polynomial equations.** Solve $x^3 - 3x - 2 = 0$.
3. **Parabolas.** For the parabola $y = 2x^2 - 8x + 6$ find the vertex, the points where it meets the coordinate axes, and draw it.
4. **Circles.** Write the equation of the circle having the segment AB as a diameter, with $A = (-1, 3)$ and $B = (5, -5)$. Is the origin inside or outside the circle?
5. **Exponential equations.** Solve $2^{x+2} + 2^{x-1} = 36$.
6. **Logarithmic equations.** Solve $(\log_2 x)^2 - 3\log_2 x + 2 = 0$.
7. **Trigonometry.** Using the subtraction formulas and $\frac{\pi}{12} = \frac{\pi}{3} - \frac{\pi}{4}$, compute $\cos\frac{\pi}{12}$ and $\sin\frac{\pi}{12}$.
8. **Trigonometric equations.** Solve $2\sin 2x = 1$.
9. **Trigonometric equations.** Solve $\cos x - \sqrt{3}\sin x = -1$ using the tangent of the half angle.
10. **Exponential equations.** Solve $\left(\sqrt{2+\sqrt{3}}\right)^x + \left(\sqrt{2-\sqrt{3}}\right)^x = 4$.