Classwork 13_E

Exercises

Caboara

Solve the following exercises.

1. **Polynomial gcd.** Compute, with the Euclidean algorithm, the gcd of
$$A(x) = x^3 + 2x^2 - x - 2 \qquad \text{and} \qquad B(x) = x^3 + 3x^2 + 2x$$
2. **Parabolas.** Find the parabola with vertical axis, vertex $V = (2, -1)$, passing through $P = (0, 3)$. Then find its intersections with the line $y = x - 1$.
3. **Circles.** Find the common points of the circles $\Gamma_1 \colon x^2+y^2 = 25$ and $\Gamma_2 \colon x^2+y^2-14x+17 = 0$. Give center and radius of Γ_2.
4. **Exponential equations.** Solve $2^{x+1} + 2^{x+3} = 80$.
5. **Logarithmic equations.** Solve $\log_2 x + \log_x 2 = \frac{5}{2}$.
6. **Trigonometry.** Prove that $\dfrac{\sin 3x}{\sin x} - \dfrac{\cos 3x}{\cos x} = 2$ for every x with $\sin x \neq 0$ and $\cos x \neq 0$.
7. **Trigonometric equations.** Solve $\sqrt{3}\tan x - 2\sin x = 0$.
8. **Trigonometric equations.** Solve $\sqrt{3}\cos x - \sin x = \sqrt{3}$ using the tangent of the half angle.
9. **Trigonometric equations.** Solve $\sin^6 x + \cos^6 x = \frac{5}{8}$.