

MATH 7
QUADRATIC AND INEQUALITIES REVIEW

HOMEWORK

1. (a) Find the minimal possible value of the expression $x^2 + 4x + 2$
(b) Given a number $a > 0$, find the maximal possible value of $x(a - x)$ (the answer will depend on a).
2. What is the smallest possible value of $x^2 + 4$?
3. Find the value of a for which the quadratic $ax^2 - 4x + 4 = 0$ has a double root.
4. Find all x such that $2x^2 = 1 - x$
5. Factor $x^4 - 81$.
6. Graph: $f(x) = x^2 + x - 2$ and $g(x) = -x^2 - x + 2$
7. Solve the inequality: $|2 - x| > 3$. Use interval notation for your answer.
8. Use the snake method to solve the inequality: $x^2(x + 1)(x - 1)(x + 2) > 0$
9. Solve the equation $x^2 - 3x - 4 = 0$
10. Find a, b, c for which $ax^2 + bx + c = (2x - 1)(1 - x)$.
11. Let x_1, x_2 be the roots of the equation $x^2 - 5x + 6 = 0$. Find
(a) $x_1^2 + x_2^2$ (b) $(x_1 - x_2)^2$ (c) $\frac{1}{x_1} + \frac{1}{x_2}$ (d) $x_1^3 + x_2^3$
(hint for part (d): compute first $(x_1 + x_2)(x_1^2 + x_2^2)$)