MATH 1023 COLLEGE ALGEBRA Quiz 8 Name:
PROF. PAUL BAILEY March 26, 2004

Problem 1. In each case, say whether or not the function is a polynomial.

(a) $f(x) = x^2 + 5x^{-1}$;

(b) $f(x) = x^3 + \sqrt{x}$;

(c) $f(x) = \frac{1}{2}x^2 + x - \sqrt{2}$.

Problem 2. In each case, identify the degree, the leading coefficient, and the constant coefficient.

(a) $f(x) = x$;

(b) $f(x) = 2x + x^3 - \sqrt{2} + 3x^2$;

(c) $f(x) = x^2 + x + 1 + x + x^2 + x$.

Problem 3. Let $f(x) = x^3 - 19x + 30$.

(a) Verify that $f(2) = 0$.

(b) Divide $f(x)$ by $x - 2$.

(c) Find all roots of $f(x)$.

Problem 4 (Extra Credit). The locus of the equation $x^2 + y^2 = 9$ is a circle of radius 3 centered at the origin. The line $y = 2x$ intersects this circle in two points. Find these points. Justify your answer.