MATH 1023 COLLEGE ALGEBRA Quiz 5 Name:
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Problem 1. Let $f(x) = (x-2)^2 - 1$.

(a) Find the y-intercept of f (this is the point $(0, y)$ where $y = f(0)$).

(b) Find the x-intercepts of f (these are the points $(x, 0)$ obtained by solving $f(x) = 0$).

(c) Sketch the graph of $f(x)$.

Problem 2. Express the result in standard form (collect like terms and sort them).

(a) Let $f(x) = 2x^2 - 2$ and $g(x) = 5x^2 + 3x + 8$; find $f(x) + g(x)$.

(b) let $f(x) = x^5 + x^4 + x^3 + x^2 + x + 1$ and $g(x) = -x^5 + x^4 - x^3 + x^2 - x + 1$; find $f(x) + g(x)$;

(c) Let $f(x) = x + 1$ and $g(x) = 2x - 3$; find $f(x) \cdot g(x)$.

Problem 3 (Extra Credit). The locus of the equation $x^2 + y^2 = 5$ is a circle of radius $\sqrt{5}$ centered at the origin. The line $y = 2x$ intersects this circle in two points. Find these points. Justify your answer.