Review Quiz
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1. Let $f(x) = x^2 - 3x + 1$ and $g(x) = x - 2$. Find $f \circ g$ and $g \circ f$.

2. Find the domain of each of the following functions:

   (a) $g(x) = \dfrac{3x}{x^2 - 1}$

   (b) $h(t) = \sqrt{2x - 6}$

   (c) $k(t) = \ln(3t - 6)$

3. A point $P = (x, y)$ lies in the graph of the function $f(x) = 3x - 5x^2 + x^3$. Find y if $x = -2$.

4. Find the equation of a line that has slope 4 and passes through the point $(1, 7)$.

5. A function f is increasing in the interval $[-1, 3]$ and decreasing in the interval $[3, 5]$. Compare the following pairs of values

   (a) $f(-.5)$ and $f(1)$

   (b) $f(3.5)$ and $f(4)$

   (c) $f(2)$ and $f(4)$

   If you think that there is not enough information to perform a comparison state so.

6. Let $f(x) = \dfrac{3}{x - 4}$. Find the inverse function $f^{-1}(x)$.

7. Let $f(x) = 6x^4 - 31x^3 + 36x^2 + 19x - 30$. List all possible rational roots of f.

8. Given that $x = -3$ is a solution of the equation $x^3 - x^2 - 11x + 3 = 0$ find all other solutions.

9. Prove that the polynomial fucnction $g(x) = 3x^5 - 2x^4 + 3x^3 - 4x + 1$ has at least one zero in the interval $[-1, 0]$.

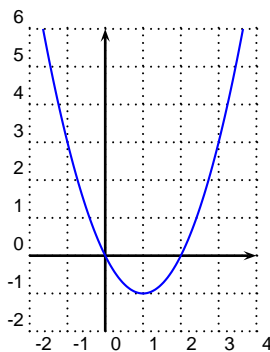10. Find the equation of the *parabola* in Figure 1.

Figure 1: The parabola in question 10

11. Find all solutions to the equation
$$\sin \theta = 1$$
for $\theta \in [-2\pi, 2\pi]$.