

1. Use the functions $f(x) = x^2$ and $g(x) = \sqrt{2-x}$ to find the specified function:

a. $(f - g)(x)$ b. $\left(\frac{f}{g}\right)(x)$ c. $(f \circ g)(x)$ d. $(g \circ f)(x)$

2. What is the domain for (1b)? Justify your answer.

3. Identify the vertex and x-intercepts of the graph of $y = x^2 + 5x + 6$

4. Find all the real roots. for $f(x) = 4x^3 - 12x^2 + 9x$

5. Divide using long division. Include a remainder if necessary: $(2x^3 + 5x + -3) \div (x - 2)$

6. Sketch the graph of the following function: $f(x) = x^3 + 7x^2 + 6x$