1) $f(x) = 3 - x^2$
   a) $f(0) = 3$

   b) $f(\sqrt{3}) = 0$

   c) $f(-2) = -1$

2) $f(x) = \begin{cases} \cos x & x \leq 0 \\ 2x & x > 0 \end{cases}$

   a) $f\left(-\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$ c) $f(1) = 2$

   b) $f(0) = 1$ d) $f(a^2) = 2a^2$

3) $f(x) = x^2 - 3x + 2$

   a) $f(x+h) = (x+h)^2 - 3(x+h) + 2$
   $= x^2 + 2xh + h^2 - 3x - 3h + 2$

   b) $f(x+h) - f(x) = x^2 + 2xh + h^2 - 3x - 3h + 2 - (x^2 - 3x + 2)$
   $= 2xh + h^2 - 3h$

   c) $\dfrac{f(x+h) - f(x)}{h} = \dfrac{2xh + h^2 - 3h}{h}$

   $= \dfrac{h(2x + h - 3)}{h} = 2x + h - 3$

4) $f(x) = \sin x \quad g(x) = \pi x$
   a) $f(g(2)) = \sin(2\pi)$
   $= 0$

   b) $g(f(0)) = 0$

   c) $g\left(f\left(\frac{\pi}{4}\right)\right) = \pi\left[\frac{\sqrt{2}}{2}\right]$

5) $f(x) = \sqrt{x+2} \quad g(x) = 2x$
   a) $f(g(x)) = \sqrt{2x+2}$

   b) $g(f(x)) = 2\sqrt{x+2}$

   c) $f(f(x)) = \sqrt{\sqrt{x+2}+2}$

   d) $g(g(x)) = 2(2x) = 4x$

6) $f(x) = \begin{cases} x^2 + 2, & x \leq 1 \\ 2x^2 + 2, & x > 1 \end{cases}$

   a) $f(-2) = -2$ c) $f(1) = 3$

   b) $f(0) = 2$ d) $f(s^2 + 2) = 2(s^2 + 2)^2 + 2$
   $= 2(s^4 + 4s^2 + 4) + 2$
   $= 2s^4 + 8s^2 + 10$

7) a) $y = 2 + \sqrt{x-1}$

      D: $x - 1 \geq 0$

      D: $x \geq 1$

      $[1, \infty)$

b) $y = 4 - x^2$

      D: $\mathbb{R}$ or $(-\infty, \infty)$

c) $y = \frac{1}{x-2}$

      D: $x - 2 \neq 0$

      D: $x \neq 2$

      or

      $(-\infty, 2) \cup (2, \infty)$

d) $y = \frac{1}{x^2 + 3x - 4}$

      $x^2 + 3x - 4 \neq 0$

      $(x - 4)(x + 1) \neq 0$

      D: $x \neq 4 \quad x \neq -1$

      or

      D: $(-\infty, -1) \cup (-1, 4) \cup (4, \infty)$