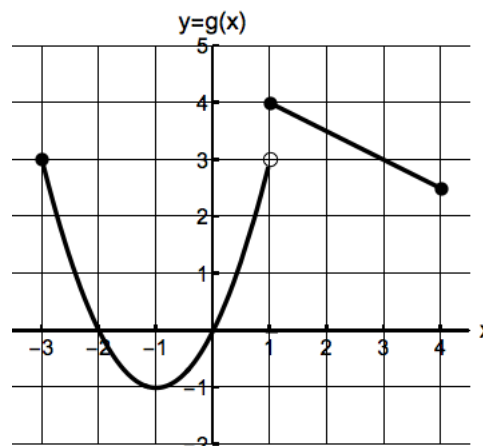


4. [13 points] Consider the following functions

x	-2	-1	0	1	2	3
$p(x)$	0	3	2	1	-4	-2

$$k(x) = x^2 - x$$



- a. [6 points] Find the values of the following quantities. If any of the quantities is not defined, write “UNDEFINED”. Simplify your answers.

Solution:

- i) $k(-4) = (-4)^2 - (-4) = 20$.
- ii) $(p(2))^{-1} = (-4)^{-1} = -0.25$.
- iii) $(2g(1) + 1)^2 = (2(3) + 1)^2 = 81$.
- iv) $g(k(2)) = g(2) = 3.5$

- b. [2 points] Find an expression for $k(t+1)$ in terms of only the variable t . You do not need to simplify it.

Solution:

$$k(t+1) = (t+1)^2 - (t+1)$$

- c. [5 points] Find all the solutions to the following equations. Your answers must be exact. If an equation has no solution, write “No solution”. Show all your work.

i) $k(z) = 0$.

Solution: $z^2 - z = z(z-1) = 0$ then $z = 0$ and $z = 1$.

ii) $p(g(t)) = -2$

Solution: $p(g(t)) = -2$ implies $g(t) = 3$. Then $t = 3, -3$.