Problem 1

If $f(x) = x + \sqrt{2 - x}$ *and* $g(x) = u + \sqrt{2 - u}$, *is it true that* $f = g$*?*

Solution

True

Problem 2

If

$$f(x) = \frac{x^2 - x}{x - 1} \quad \text{and} \quad g(x) = x$$

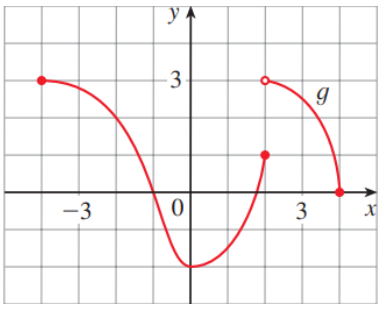
is it true that $f = g$*?*

Solution

False

Problem 3

The graph of a function g *is given:*



1. *State the values of* $g(-2)$, $g(0)$, $g(2)$ *and* $g(3)$

   ### Solution

   $g(-2) = 2 \quad g(0) = -2 \quad g(2) = 1 \quad g(3) = 2.5$

2. *For what value(s) of* x *is* $g(x) = 3$*?*

   ### Solution

   $g(x) = 3 \Rightarrow x = -4$

3. *For what value(s) of* x *is* $g(x) \leq 3$*?*

Solution

$g(x) \leq 3 \Rightarrow x \in [-4, 4]$

4. *State the domain and range of g*

Solution

Domain : $[-4, 4]$ Range : $[-2, 3]$

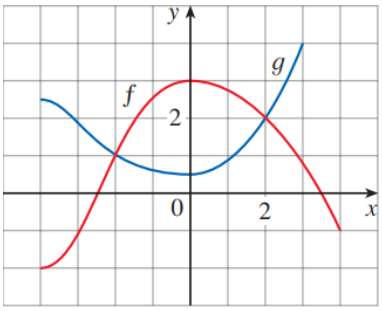
5. *On what interval(s) is g increasing?*

Solution

$[0, 2]$

Problem 4

The graph of f and g are given:



1. *State the values of $f(-4)$ and $g(3)$*

Solution

$f(-4) = -2 \quad g(3) = 4$

2. *Which is larger, $f(-3)$ or $g(-3)$?*

Solution

$g(-3)$

3. *For what values of x is $f(x) = g(x)$?*

Solution

$x = \pm 2$

4. *On what interval(s) is $f(x) \leq g(x)$?*

Solution

$[-4, -2] \cup [2, 3]$

5. *State the solution of the equation* $f(x) = -1$

Solution

$f(x) = -1 \Rightarrow x = -3$

6. *On what interval(s) is* g *decreasing?*

Solution

$[-4, 0]$

7. *State the domain and range of* f

Solution

Domain : $[-4, 4]$ Range : $[-2, 3]$

8. *State the domain and range of* g

Solution

Domain : $[-4, 3]$ Range : $[0.5, 4]$