

**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

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

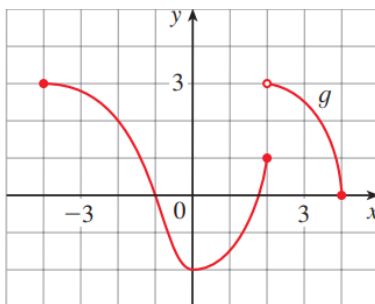
is it true that  $f = g$ ?

**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**

$$\text{Domain : } [-4, 4] \quad \text{Range : } [-2, 3]$$

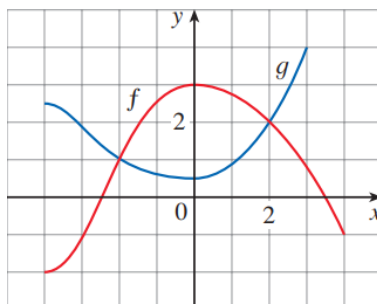
5. On what interval(s) is  $g$  increasing?

**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**

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

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**

$$\text{Domain : } [-4, 4] \quad \text{Range : } [-2, 3]$$

8. *State the domain and range of  $g$*

**Solution**

$$\text{Domain : } [-4, 3] \quad \text{Range : } [0.5, 4]$$