



Quiz 1

Question 1

(A) Determine whether the statement is (TRUE) or (FALSE). Shade (T) if the answer is True and (F) if the answer is False in the answer sheet on page 1. (2 Marks)

1. The range of the function $f(x) = |x|$ is $[0, +\infty)$.

(✓)

2. The graph $y = 3 + (x - 2)^2$ can be obtained by translating the graph $y = x^2$ left 2 units and up 3 units.

(X)

right

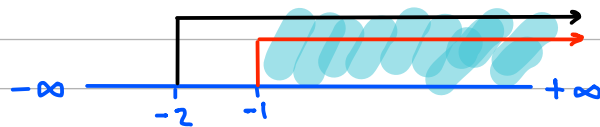
*)graphs of fuctions :	
$f(x) + c$	→ Shifting up by (c)
$f(x) - c$	→ Shifting down by (c)
$f(x+c)$	→ Shifting left by (c)
$f(x-c)$	→ Shifting right by (c)
$-f(x)$	→ Reflection about x-axis
$f(-x)$	→ Reflection about y-axis
$a f(x)$	→ Vertical stretching
$\frac{1}{a} f(x)$	→ Vertical compressing
$f(ax)$	→ Horizontal compressing
$f(\frac{1}{a}x)$	→ Horizontal stretching

3. If $f(x) = \sqrt{x+1}$ and $g(x) = \sqrt{x+2}$, then the domain of $(f+g)(x)$ is $[-1, +\infty)$.

(✓)

$$D_f = x \geq -1 \rightarrow [-1, \infty)$$

$$D_g = x \geq -2 \rightarrow [-2, \infty)$$



$$D_{f+g} = D_f \cap D_g = [-1, \infty) \cap [-2, \infty) = [-1, \infty)$$

4. The function $f(x) = \frac{\sin x}{x^2 + x + 1}$ is a rational function.

(X)

rational function $\rightarrow f(x) = \frac{P(x)}{Q(x)}$

where $P(x)$ and $Q(x)$ are polynomial

1. The graph of an even function is symmetric about y -axis.

(✓)

2. If $f(x) = \sqrt[3]{x}$ and $g(x) = x^3 + 1$, then $g(f(-27)) = 9$.

(✗)

$$f(-27) = \sqrt[3]{-27} = -3$$

$$g(f(-27)) = g(-3)$$

$$g(-3) = (-3)^3 + 1 = -27 + 1 = -26$$

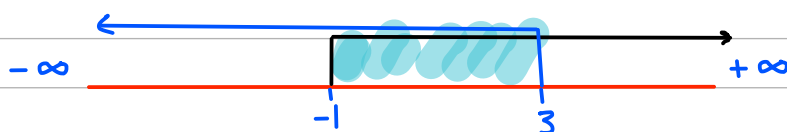
$$g(f(-27)) = -26$$

3. If $f(x) = \sqrt{3-x}$ and $g(x) = \sqrt{x+1}$, then the domain of $(f+g)(x)$ is $[-1, 3]$. ()

$$D_f = 3 - x \geq 0 \rightarrow x \leq 3 = (-\infty, 3]$$

$$D_g = x \geq -1 \rightarrow [-1, \infty)$$

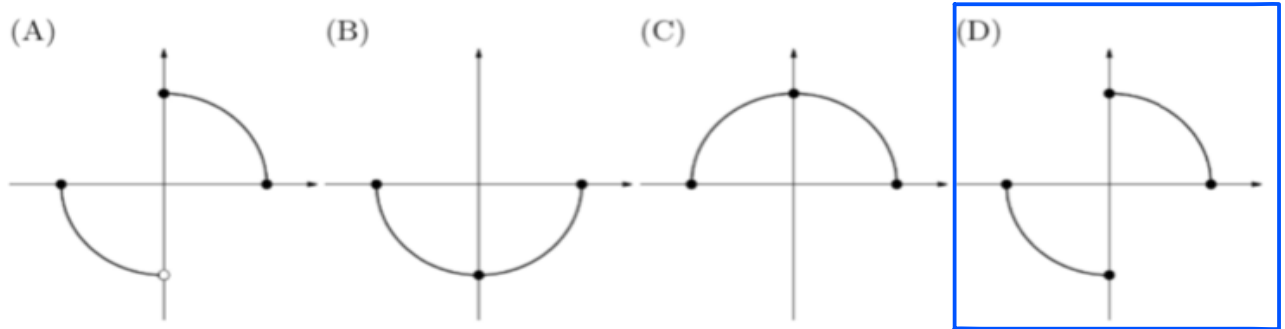
$$D_{f+g} = D_f \cap D_g = (-\infty, 3] \cap [-1, \infty) = [-1, 3]$$



(B) Each of the following questions is followed by four options, lettered (A) to (D). Choose the correct answer and then shade it front the question number in the answer sheet on page 1

(5 Marks)

5. The graph that **does not** represent a function is



7. If $f(x) = \sqrt{x-1}$ and $g(x) = x^2 + 1$, then $(f \circ g)(x) =$

(A) x

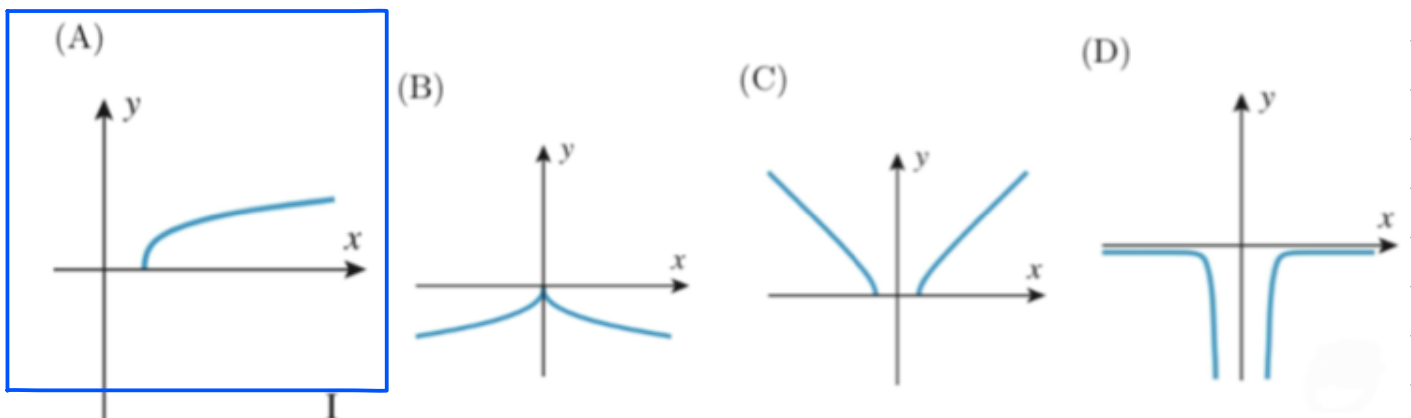
(B) $|x|$

(C) $(x^2 + 1)\sqrt{x-1}$

(D) $\sqrt{x^2 + 1}$

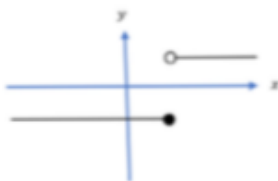
$$f(g(x)) = f(x^2 + 1) = \sqrt{x^2 + 1 - 1} = \sqrt{x^2}$$

5. The graph of the function that has an inverse is

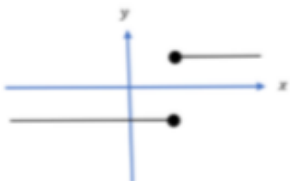


8. The graph that does **Not** represent a function is

(A)



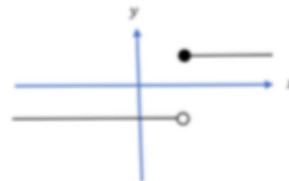
(B)



(C)



(D)



10. If $f(x) = \sqrt[5]{x-2}$, then $f^{-1}(x) =$

(A) $x^5 - 2$

(B) $(x - 2)^5$

(C) $x^5 + 2$

(D) $(x + 2)^5$

$$y = \sqrt[5]{x-2}$$

$$y^5 = (\sqrt[5]{x-2})^5$$

$$y^5 = x - 2$$

$$x = y^5 + 2$$

$$f^{-1}(x) = x^5 + 2$$

9. The domain of the function $f(x) = \frac{1}{x^3 + x}$ is

(A) $\mathbb{R} - \{0\}$

(B) $\mathbb{R} - \{1\}$

(C) $\mathbb{R} - \{0, 1\}$

(D) \mathbb{R}

