



Quiz 1:

$$Q1) \lim_{x \rightarrow 3^-} \frac{x}{x-3}$$

$$a) \underline{-\infty}$$

$$b) -\frac{1}{3}$$

$$c) \infty$$

$$d) 0$$

$$\lim_{x \rightarrow 3^-} \frac{x}{x-3} = \frac{3}{3-3} = \frac{3}{0} = -\infty$$



$$Q2) \text{ Domain of } f(x) = \frac{1}{x+2} \text{ is :}$$

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

$$b) (-\infty, 2]$$

$$c) \underline{(-\infty, -2) \cup (-2, +\infty)}$$

$$d) [-2, +\infty)$$

$$x+2=0 \rightarrow x=-2$$

$$D = \mathbb{R} \setminus \{-2\}$$

$$\text{Q3) } \lim_{x \rightarrow 4} \frac{x^2 - 6x + 8}{x - 4}$$

a) 0

b) 2

c) 4

d) 6

$$\lim_{x \rightarrow 4} \frac{x^2 - 6x + 8}{x - 4} = \frac{4^2 - 6(4) + 8}{4 - 4} = \frac{0}{0}$$

$$\lim_{x \rightarrow 4} \frac{(x-2)(x-4)}{(x-4)} = \lim_{x \rightarrow 4} (x-2) = 4 - 2 = 2$$

Q4) Range of $f(x) = \sqrt{x+1} + 4$ is :

a) $[1, \infty)$

b) $[-4, \infty)$

c) $[4, \infty)$

d) $[-1, \infty)$

$$D = x+1 \geq 0 \rightarrow x \geq -1 \rightarrow [-1, \infty)$$

$$x+1 \geq 0$$

$$\sqrt{x+1} \geq 0$$

$$\sqrt{x+1} + 4 \geq 0 + 4$$

$$\sqrt{x+1} + 4 \geq 4$$

Q5) if $f(x) = \begin{cases} 4x-1 & x \geq 2 \\ 7 & x < 2 \end{cases}$ then $\lim_{x \rightarrow 2} f(x)$

a) 2

b) DNE

c) 8

d) 7

Q6) $f(x) = x^2 + 2x$ is even function

a) True

b) false

$$f(-x) = (-x)^2 + 2(-x) = x^2 - 2x \neq f(x)$$

Q7) if the function $f(x) = \sqrt{6x+1}$ then $f^{-1}(x) =$

a) $x^2 - 1$

b) $\frac{1}{6}x^2 - 1$

c) $\frac{1}{6}(x^2 + 1)$

d) $\frac{1}{6}(x^2 - 1)$

$$y = \sqrt{6x+1}$$

$$y^2 = (\sqrt{6x+1})^2$$

$$y^2 = 6x+1$$

$$y^2 - 1 = 6x$$

$$x = \frac{y^2 - 1}{6}$$

$$f^{-1}(x) = \frac{x^2 - 1}{6}$$

Q8) The graph $Y = (X+1)^2 - 3$ is obtained by translation of the graph $Y = X^2$ left 1 unit and down 3 units

a) True

b) false

Q9) $f(x) = \frac{1}{x}$ and $g(x) = 3x+2$ then $(f \circ g)(x) =$

a) $\frac{1}{3x}$

b) $\frac{1}{3x+2}$

c) $\frac{1}{3x} + 2$

d) $\frac{1}{3x^2}$

$$(f \circ g)(x) = f(g(x)) = f(3x+2) = \frac{1}{3x+2}$$

Q10) $\lim_{x \rightarrow 5} \frac{x^2 - 4x - 5}{x - 5}$

a) 5

b) 0

c) 6

d) 2

$$\lim_{x \rightarrow 5} \frac{x^2 + x - 5x - 5}{x - 5}$$

$$\lim_{x \rightarrow 5} \frac{x(x+1) - 5x - 5}{x - 5}$$

$$\lim_{x \rightarrow 5} \frac{x(x+1) - 5(x+1)}{x - 5}$$

$$\lim_{x \rightarrow 5} \frac{(x+1)(x-5)}{(x-5)}$$

$$\lim_{x \rightarrow 5} (x+1) = 5+1 = 6$$