

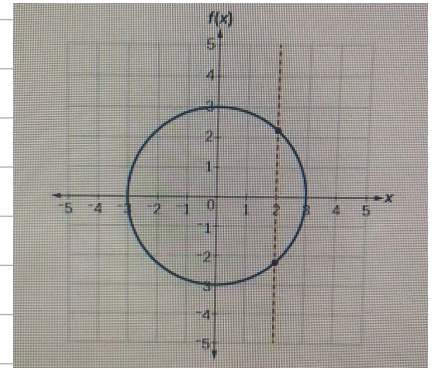


# Quiz 1

1) The Graph define  $Y$  as function of  $X$

a) True

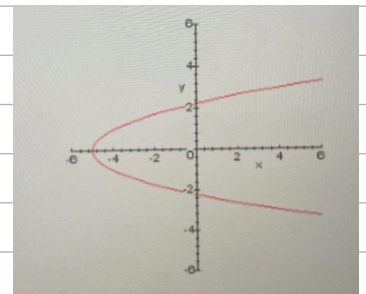
b) false



2) The Curve symmetric about  $X$  axis

a) True

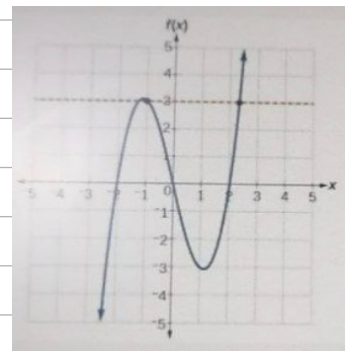
b) false



3) The Curve symmetric about origin

a) True

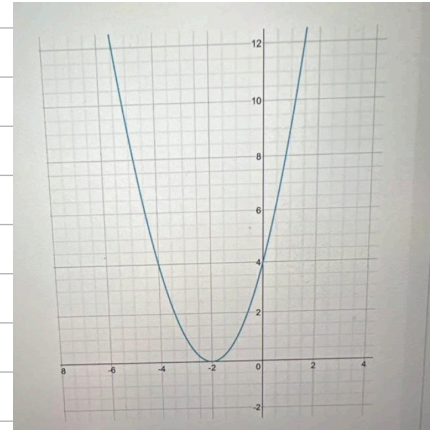
b) false



4) The Graph define  $Y$  as function of  $X$

a) True

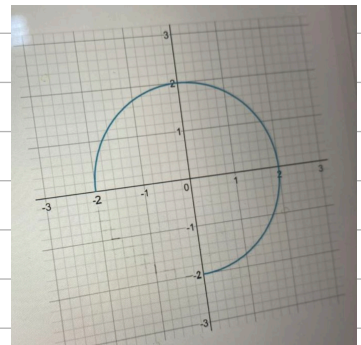
b) false



5) The Graph define  $Y$  as function of  $X$

a) True

b) false



6) The function  $f(x) = 5x + 25$  and  $g(x) = \frac{1}{5}x - 5$

inverse functions

a) True

b) false

$$\begin{aligned}f(g(x)) &= f\left(\frac{1}{5}x - 5\right) = 5\left(\frac{1}{5}x - 5\right) + 25 \\ &= x - 25 + 25 \\ &= x\end{aligned}$$

$$\begin{aligned}g(f(x)) &= g(5x + 25) = \frac{1}{5}(5x + 25) - 5 \\ &= x + 5 - 5 \\ &= x\end{aligned}$$

7) if  $f(x) = \sqrt[3]{x+2}$  then

a)  $f^{-1}(x) = (x-2)^7$    b)  $f^{-1}(x) = x^7 + 2$

c)  $f^{-1}(x) = x^7 - 2$

$$y = \sqrt[3]{x+2}$$

$$y^3 = (\sqrt[3]{x+2})^3$$

$$y^3 = x+2 \rightarrow y^3 - 2 = x$$

$$f^{-1}(x) = x^3 - 2$$

8) The graph of function that is obtained by translating the graph of  $Y=f(x)$  left 3 units and down 4 units

a)  $Y=f(x+3)-4$

b)  $Y=f(x-3)+4$

c)  $Y=f(x-3)-4$

d)  $Y=f(x+3)+4$

\*graphs of functions :

$f(x)+c$	→ 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
$a \cdot f(x)$	→ Vertical stretching
$\frac{1}{a} \cdot f(x)$	→ Vertical compressing
$f(ax)$	→ Horizontal compressing
$f(\frac{1}{a}x)$	→ Horizontal stretching

9) if  $f(x) = \begin{cases} \frac{1}{x} & x < 1 \\ 3x+1 & x > 1 \end{cases}$  then  $f(\frac{1}{3}) = 3$

$$= \frac{1}{\frac{1}{3}} = \frac{3}{1} = 3$$

a) True

b) false

10) The function  $f(x) = 3x+9$  and  $g(x) = \frac{1}{3}x-3$

inverse functions

a) True

b) false

$$f(g(x)) = f\left(\frac{1}{3}x-3\right) = 3\left(\frac{1}{3}x-3\right)+9$$

$$= x-9+9$$

$$= x$$

$$g(f(x)) = g(3x+9) = \frac{1}{3}(3x+9)-3$$

$$= x+3-3$$

$$= x$$

11) The range of function  $f(x) = 4 + x^2$  is

a)  $[0, \infty)$

b)  $[4, \infty)$

c)  $(-\infty, 4]$

domain =  $(-\infty, +\infty)$

range =  $f\left(-\frac{b}{2a}\right) \rightarrow a=1, b=0 \rightarrow f\left(-\frac{0}{2(1)}\right) = f(0)$

$f(0) = 4 + 0^2 = 4$

range =  $[4, \infty)$

12) The range of function  $f(x) = 4 - x^2$  is

a)  $[0, \infty)$

b)  $[4, \infty)$

c)  $(-\infty, 4]$

domain =  $(-\infty, +\infty)$

range =  $f\left(-\frac{b}{2a}\right) \rightarrow a=-1, b=0 \rightarrow f\left(-\frac{0}{2(-1)}\right) = f(0)$

$f(0) = 4 - 0^2 = 4$

range =  $(-\infty, 4]$

13) if  $f(x) = \sqrt[3]{x-2}$  and  $g(x) = x^3 + 1$  then  $f \circ g =$

a)  $x-1$

b)  $\sqrt[3]{x^3-1}$

c)  $\sqrt[3]{x-1}$

$f \circ g = f(g(x)) = f(x^3 + 1) = \sqrt[3]{x^3 + 1 - 2}$   
 $= \sqrt[3]{x^3 - 1}$

14) if  $f(x) = \begin{cases} 2x+3 & x < 1 \\ \frac{1}{x} & x > 1 \end{cases}$  then  $f(\frac{1}{2}) = 2$

$$= 2(\frac{1}{2}) + 3 = 4$$

a) True

b) false

15) The function  $f(x) = x^2 - x$  is even function

a) True

b) false

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

16) if  $f(x) = x^3 + 14$  then

a)  $f^{-1}(x) = (x-14)^3$     b)  $f^{-1}(x) = \sqrt[3]{x-14}$

c)  $f^{-1}(x) = \sqrt[3]{x-14}$

$$y = x^3 + 14$$

$$y - 14 = x^3 \rightarrow \sqrt[3]{x^3} = \sqrt[3]{y - 14}$$

$$x = \sqrt[3]{y - 14}$$

$$f^{-1}(x) = \sqrt[3]{x - 14}$$

17) if  $f(x) = \sqrt{x-2}$  and  $g(x) = x-3$  then the domain  $f/g$  is

a)  $[2, \infty)$

b)  $[2, 3) \cup (3, \infty)$

c)  $(3, \infty)$

$$D_f = x - 2 \geq 0 \rightarrow x \geq 2 = [2, \infty)$$

$$D_g = x - 3 \neq 0 \rightarrow x \neq 3$$

$$D_{f/g} = [2, 3) \cup (3, \infty)$$