مدونة المناهج السعودية

https://eduschool40.blog

الموقع التعليمي لجميع المراحل الدراسية

في المملكة العربية السعودية

example: if $f(x)=2x^2+5x$, $g(x)=6x^2+4x$

find Domain $(f.g)(x)$

الحل

Domain $(f.g)(x)$ = Domain $f \cap$ Domain g

Domain $f(x)=(-\infty,+\infty)$

Domain $g(x)=(-\infty,+\infty)$

Domain $(f.g)(x)=(-\infty,+\infty)\cap(-\infty,+\infty)$

$=(-\infty,+\infty)$ الجواب A

(A) $(-\infty,+\infty)$

(B) $(-\infty,4]$

(C) $[4,+\infty)$

(D) $(-\infty,4)\cup(4,+\infty)$

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example: if $f(x)=\sqrt{x-5}$, $g(x)=-6x+7$

find Domain $(f-g)(x)$

الحل

Domain $f(x)$: $x-5\geq 0 \Rightarrow x\geq 5$

$[5,+\infty)$

Domain $g(x)=(-\infty,+\infty)$

Domain $(f-g)(x)=[5,+\infty)\cap(-\infty,+\infty)$

$=[5,+\infty)$

الجواب A

(A) $[5,+\infty)$

(B) $(-\infty,5]$

(C) $(5,+\infty)$

(D) $(-\infty,+\infty)$

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example: if $f(x)=3x+5$, $g(x)=4x+3$

find $(f.g)(1)$

الحل

$(f.g)(1)=f(1)\cdot g(1)$

$f(1)=3(1)+5=8$

$g(1)=4(1)+3=7$

$(f.g)(1)=(8)(7)=56$

الجواب B

(A) 3

(B) 56

(C) 9

(D) 20

//2.3 //2.4

example: The function $f(x)=3x^2+6x^4+7$ is

(A) even
(B) odd
(C) neither
(D) even and odd

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example: The function is even:

(A) $f(x)=x^3+x^2$
(B) $f(x)=\frac{x^2+x}{x}$
(C) $f(x)=|x|+x^4$
(D) $f(x)=\frac{1}{x}$

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example: The function is neither

(A) $f(x)=x^2$
(B) $f(x)=|x|+x$
(C) $f(x)=\frac{1}{x^2}$
(D) $f(x)=x^3+x$

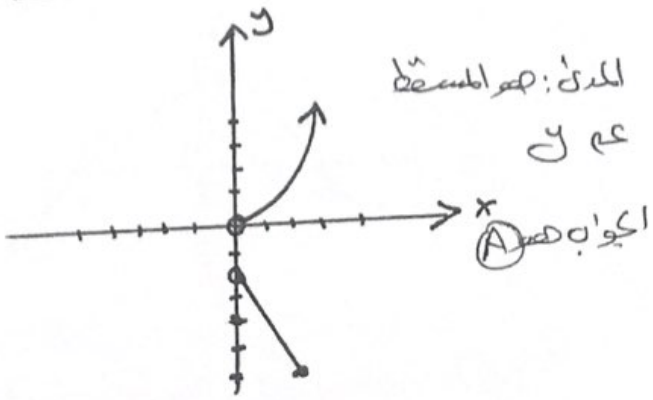
example: The Range from the graph

(A) $[-6,-2)\cup(0,+\infty)$

(B) $(-6,-2)\cup(0,+\infty)$

(C) $(-3,+\infty)$

(D) $[-3,+\infty)$



المدى: هو المسقط
عن y

الجواب هو A

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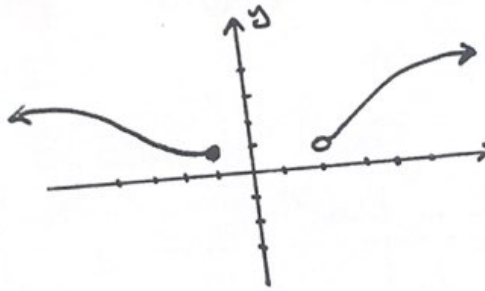
example: The Domain from the graph

(A) $[-1,2)$

(B) $(-\infty,-1]\cup(1,+\infty)$

(C) $(-\infty,-1]\cup(2,+\infty)$

(D) $(-\infty,+\infty)$



المجال هو المسقط
عن محور الـ x

الجواب هو C

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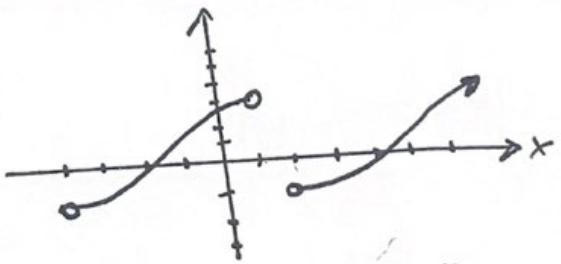
example: From the graph find the increasing

(A) $(-\infty,+\infty)$

(B) $(-4,-1)$

(C) $(2,+\infty)$

(D) $(-4,+1)\cup(2,+\infty)$



الجواب

increasing: المتزايدة

الاتجاه من اليسار إلى اليمين باتجاه (الأعلى)

$(-4,+1)\cup(2,+\infty)$

الجواب هو D

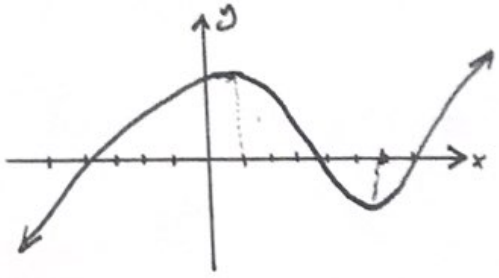
example : From The graph f decreasing

(A) $(-\infty, 1)$

(B) $(1, 6)$

(C) $(2, +\infty)$

(D) $(-\infty, 1) \cup (6, +\infty)$



decreasing: متناقصة

الإتجاه من اليسار إلى اليمين نحو الأسفل

(B) الجواب هو $(1, 6)$

---

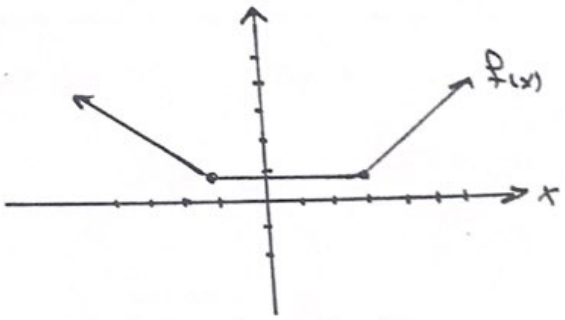
example : From The graph find constant

(A) $(-1, 3)$

(B) $(-\infty, -1)$

(C) $(3, +\infty)$

(D) $(-\infty, -1) \cup (3, +\infty)$



constant : الثابت

الاتجاه من اليسار إلى اليمين بشكل موازي لمحور x

$(-1, 3)$

(A) الجواب هو

---

example if $f(x) = \begin{cases} 5x+1 & ; x \leq 4 \\ x^2+4 & ; x > 4 \end{cases}$

find $f(2)$

(A) 5

(B) 10

(C) 11

(D) 13

الحل

$f(2) = 5(2) + 1 = 10 + 1 = 11$

الجواب هو (C)

example: $f(x)=\begin{cases} 2x+4 & ; x\le 3 \\ x^2+5 & ; x>3 \end{cases}$

find $f(2)+f(4)$

(A) 8

(B) 29

(C) 21

(D) 30

الحل

$f(2)=2(2)+4=8$

$f(4)=(4)^2+5=16+5=21$

$f(2)+f(4)=8+21=29$

الجواب صح (B)

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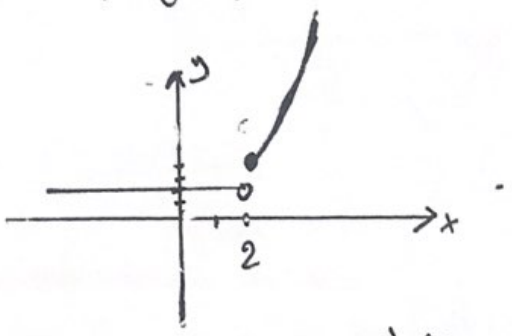
example: The equation of graph



A) $f(x)=\begin{cases} x^2 & ; x\le 2 \\ 2 & ; x>2 \end{cases}$

B) $f(x)=\begin{cases} x^2 & ; x\ge 2 \\ 2 & ; x<2 \end{cases}$

C) $f(x)=\begin{cases} x & ; x<2 \\ 1 & ; x\ge 2 \end{cases}$

D) $f(x)=\begin{cases} 1 & ; x\le 2 \\ x & ; x>2 \end{cases}$

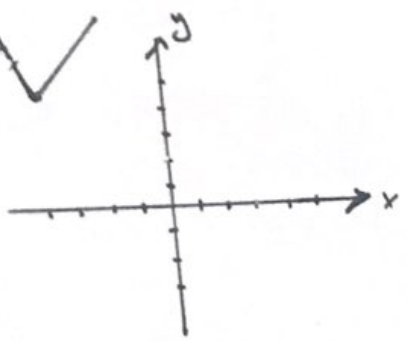
الجواب B

2.5

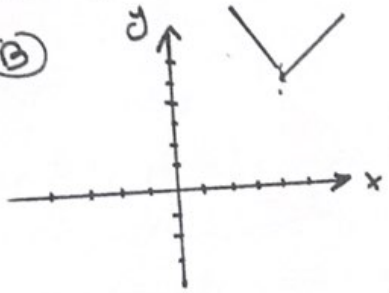
Example: The graph of the equation

$$f(x) = |x-4| + 5$$

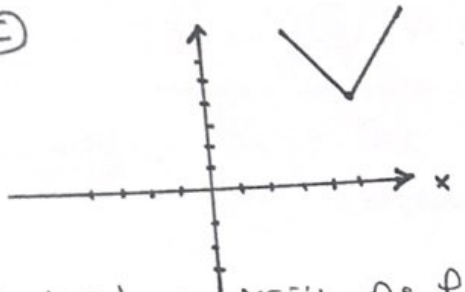
(A)



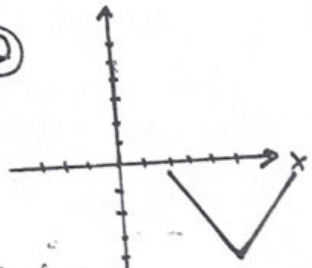
(B)



(C)



(D)



ملاحظة $f(x)=|x-4|+5$ وهو انتقال 4 وحدات لليمين و 5 وحدات للأعلى

الجواب هو (B)

Example: From the graph find the equation

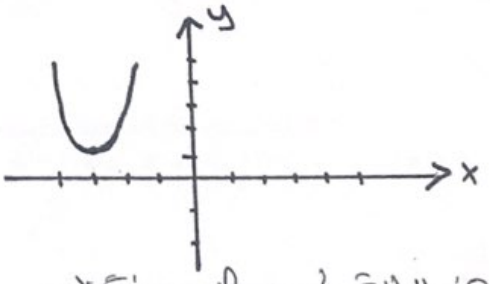
(A) $f(x) = (x-3)^2 - 1$

(B) $f(x) = -(x+3)^2 - 1$

(C) $f(x) = (x+3)^2$

(D) $f(x) = (x+1)^2 - 3$

(E) $f(x) = (x+3)^2 + 1$



هذه الدالة $f(x)=x^2$ مع انتقال ٣ وحدات لليسار و وحدة واحدة للأعلى

$$f(x) = (x+3)^2 + 1$$

الجواب هو (E)

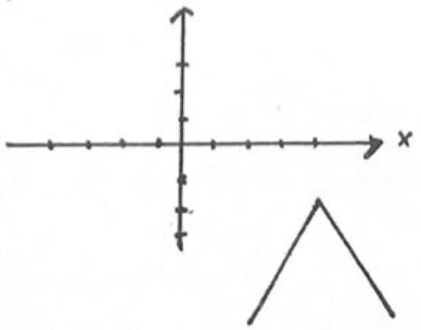
example: From the graph find the equation.

(A) $f(x) = -|x+4| + 2$

(B) $f(x) = -|x-4| - 2$

(C) $f(x) = |x+4| - 2$

(D) $f(x) = -|x+4| - 2$



اكل هذه الدالة $f(x)=|x|$ مع انعكاس عن محور x $f(x)=-|x|$ مع انتقال 4 وحدات لليسار $f(x)=-|x-4|$ مع انتقال 2 وحدة لأسفل

(B) الجواب هو $f(x) = -|x-4| - 2$

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example: from the function $f(x) = |x-4|$ is obtained from $f(x)=|x|$

(A) vertical shift 4 units up.

(B) vertical shift 4 units down

(C) horizontal shift 4 unit right

(D) horizontal shift 4 units left

(C) الجواب هو نلاحظ انتقال 4 وحدات لليمين

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example: The function $f(x) = (x+3)^3 + 5$ is obtained from $f(x) = x^3$

(A) translation 3 units right, 5 units down

(B) translation 3 units left, 5 units up.

(C) translation 3 units right, 5 units down

(D) translation 5 units right, 3 units up

اكل انتقال 3 وحدات لليسار و 5 وحدات للأعلى

الجواب هو (B)

example : Find The equation from $f(x)=\sqrt{x}$ is translation 4 units left and 5 units down.

Ⓐ $f(x)=\sqrt{x+4}-5$

Ⓑ $f(x)=\sqrt{x-4}+5$

Ⓒ $f(x)=\sqrt{x-4}-5$

Ⓓ $f(x)=\sqrt{x+5}-4$

نريد معادلة $f(x)=\sqrt{x}$ انتقال 4 وحدات لليسار و 5 وحدات للأسفل.

$f(x)=\sqrt{x+4}-5$

الجواب هو Ⓐ

3.3

Example: The vertex for $f(x)=x^2+4x+2$ is:

(A) (2,3)

(B) (2,2)

(C) (-2,-2)

(D) (1,3)

الحل

$a=1, b=4, c=2$

$h=\frac{-b}{2a}=\frac{-4}{2(1)}=\frac{-4}{2}=-2$

$k=f(-2)=(-2)^2+4(-2)+2$

$=4-8+2=-2$

الجواب C vertex (-2,-2)

---

example: The standard form for $f(x)=-2x^2+12x-1$

(A) $f(x)=2(x-3)^2+17$

(B) $f(x)=-2(x-3)^2+17$

(C) $f(x)=2(x+3)^2+17$

(D) $f(x)=-2(x-3)^2-17$

الحل

$a=-2, b=12, c=-1$

$h=\frac{-b}{2a}=\frac{-12}{2(-2)}=\frac{-12}{-4}=3$

$k=f(3)=-2(3)^2+12(3)-1$

$=-18+36-1=17$

vertex (3,17)

standard form

$f(x)=-2(x-3)^2+17$

الجواب B

example: Find the equation of quadratic function with vertex (3,6) and passing through (1,5)

A) $f(x)=\pm\frac{1}{4}(x-3)^2+6$

B) $f(x)=4(x-3)^2+6$

C) $f(x)=-4(x+3)^2-6$

D) $f(x)=\frac{-1}{4}(x-3)^2+6$

الحل

$f(x)=a(x-h)^2+k$

$f(x)=a(x-3)^2+6$

نعوض النقطة (1,5)

$5=a(1-3)^2+6$

$5=a(-2)^2+6$

$5-6=a(4)$

$-1=a(4)$

$a=\frac{-1}{4}$

الجواب هو D $f(x)=\frac{-1}{4}(x-3)^2+6$

---

example: find the vertex of the equation

$f(x)=3(x+2)^2+5$

A) (2,5)

B) (-2,5)

C) (-2,5)

d) (5,2)

الحل

$f(x)=3(x+2)^2+5=a(x-h)^2+k$

$h=-2, k=5$

الجواب هو C

example: fmd The Range for

$$f(x) = 2x^2 + 8x + 3$$

الحل

A) $[-5, +\infty)$

B) $(-\infty, -5]$

C) $(-5, +\infty)$

D) $(-3, +\infty)$

$a=2, b=8, c=3$

$$h = \frac{-b}{2a} = \frac{-8}{2(2)} = \frac{-8}{4} = -2$$

$$k = f(-2) = 2(-2)^2 + 8(-2) + 3$$

$$= 8 - 16 + 3 = -8 + 3 = -5$$

$a=2>0 \Rightarrow$ Range $[k, +\infty) = [-5, +\infty)$

الجواب هو A

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example: find The value of maximume for

$$f(x) = -x^2 - 12x + 1$$

الحل

A) -6

B) 25

C) 37

D) 12

$a=-1, b=-12, c=1$

$$h = \frac{-b}{2a} = \frac{-(-12)}{2(-1)} = \frac{12}{-2} = -6$$

$$k = f(h) = f(-6) = -(-6)^2 - 12(-6) + 1$$

$$= -36 + 72 + 1$$

$$= 36 + 1 = 37$$

الجواب هو C

10.2

example: Find the focus and directrix for the equation $y^2 = 20x$

(A) focus $(-5,0)$, directrix $x = 5$

(B) $F:(5,0)$, $d: x=-5$

(C) $F(0,5)$, $d: y=5$

(D) $F(0,-5)$ $d: y=5$

الحل

القطع خواليمين

$4p = 20 \Rightarrow p = \frac{20}{4} = 5$

focus $(p,0) = (5,0)$

directrix $x = -p = -5$

(B) الجواب هو

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example: The focus and directrix for the equation $x^2 = -12y$

(A) $F:(-3,0)$, $d: x=3$

(B) $F:(3,0)$, $d: x=3$

(C) $F:(0,3)$ $d: y=-3$

(D) $F:(0,3)$, $d: y=3$

(E) $F:(0,-3)$: $d: y=3$

الحل

$-4p = -12 \Rightarrow p = \frac{-12}{-4}$

$p = 3$

focus $(0,-p) = (0,-3)$

directrix $y = p = 3$

(E) الجواب هو

---

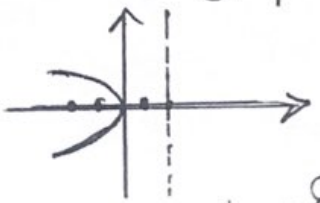
example: The equation of graph

(A) $y^2 = -8x$

(B) $y^2 = 8x$

(C) $x^2 = -8y$

(D) $x = 8y$



$p = 2$; $y^2 = -4px$ الحل

$y^2 = -4(2)x \Rightarrow y^2 = -8x$

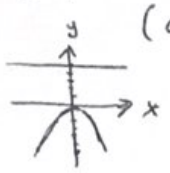
(A) الجواب هو

example: The equation of parabla with directrix $y=5$

الحل

بما أن directrix "الدليل" على محور y

و $y=5$ إذا البؤرة $(0,-5)$



إذا الفتحة نحو الأسفل

$x^2=-4py$ $p=5$

$x^2=-4(5)y$

$x^2=-20y$

(E) الجواب هو

(A) $x^2=20y$

(B) $y^2=20x$

(C) $y^2=-20x$

(D) $y^2=8x$

(E) $x^2=-20y$

---

example: The equation of parabla with directrix $x=-2$

الحل

بما أن directrix "الدليل" على محور x

إذا البؤرة $(2,0)$

$y^2=4px$

$y^2=8x$

(B) الجواب هو

(A) $y^2=4x$

(B) $y^2=8x$

(C) $y^2=-8x$

(D) $x^2=16y$

(E) $x^2=4y$

---

example: The equation of parabola with focus $(-5,0)$ is

الحل

بما أن البؤرة على محور x وسالبة

إذا الفتحة نحو اليسار

$y^2=-4px$ $p=5$

$y^2=-20x$

(C) الجواب هو

(A) $y^2=16x$

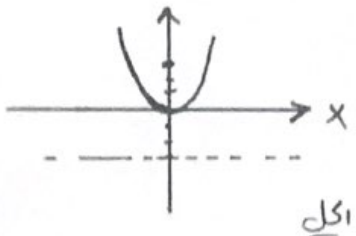
(B) $y^2=-16x$

(C) $y^2=-20x$

(D) $y^2=20x$

(E) $x^2=-20y$

Example: The equation of graph.



(A) $x^2 = -12y$

(B) $x^2 = 12y$

(C) $y^2 = 12x$

(D) $y^2 = -12x$

(E) $x^2 = 4y$

الحل

القمة نحو الأعلى

$x^2 = 4py$

$x^2 = 4(3)y$

$x^2 = 12y$

(B) الحل هو

---

example: The equation of parabola with focus $(4,0)$

(A) $x^2 = 16y$

(B) $x^2 = 4y$

(C) $y^2 = 16x$

(D) $y^2 = -16x$

(E) $y^2 = 8x$

الحل

بما أن البؤرة على محور الـ x

وموجبة إذا القمة نحو اليمين

إذا المعادلة $y^2 = 4px$

و الـ $p = 4$

$y^2 = 4(4)x = 16x$

(C) الحل هو

---

example: The equation of parabola with focus $(0,-2)$

(A) $x^2 = -8y$

(B) $x^2 = 8y$

(C) $y^2 = 8x$

(D) $y^2 = 4x$

(E) $y^2 = 16x$

الحل

بما أن البؤرة على محور الـ y

وسالبة إذا القمة نحو الأسفل

$x^2 = -4py$

$p = 2$

$x^2 = -4(2)y$

$x^2 = -8y$

(A) الحل هو

SR-10,00

تمارين مراجعة
لطلاب السنة التحضيرية

1.1 , 1.3 , 2.1 , 2.2 . 2.3 . 2.4
2.5 . 3.3 . 10.2 . 10.3 . 10.4

الحصين

1.1

example: The distance between the points $a(3,5), b(-1,2)$

الحل

A) 3

B) 5

C) 6

D) 1

$a(3,5), b(-1,2)$

$x_1\ y_1 \quad x_2\ y_2$

$$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

$$d=\sqrt{(-1-3)^2+(2-5)^2}=\sqrt{(-4)^2+(-3)^2}$$

$$=\sqrt{16+9}=\sqrt{25}=5$$

الجواب هو (B)

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example: find the midpoint between the points $a(-3,4), b(7,-6)$

الحل

$$\text{midpoint}=\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

$$=\left(\frac{-3+7}{2}, \frac{4+(-6)}{2}\right)$$

$$=\left(\frac{4}{2}, \frac{-2}{2}\right)=(2,-1)$$

//1.3//

example: find the slope of line passing through $a(\underset{x_1}{3}, \underset{y_1}{7}), b(\underset{x_2}{-2}, \underset{y_2}{-3})$

A) 5
B) -2
c) 6
d) +2

الحل

$a(\underset{x_1}{3}, \underset{y_1}{7}), b(\underset{x_2}{-2}, \underset{y_2}{-3})$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3-7}{-2-3} = \frac{-10}{-5}$$

$$= +2$$

الجواب هو د

---

example: find the slope of the equation

$$2x + 5y = 8$$

A) $m = \frac{5}{2}$
B) $m = \frac{-5}{2}$
c) $+\frac{8}{5}$
d) $-\frac{2}{5}$

الحل

$$5y = -2x + 8$$

$$y = -\frac{2}{5}x + \frac{8}{5}$$

$$m = \frac{-2}{5}$$

الجواب هو د

---

example: The slope of line

$$y + 6x = 3$$

A) -6
B) +6
c) +3
d) -3

الحل

$$y = -6x + 3$$

$m = -6$

الجواب هو A

example: find x-intercept and y-intercept for $2x+3y=12$

a) (x,0), (0,6)
b) (6,0), (0,4)
c) (2,0), (9,5)
d) (1,0), (0,3)

Sol

x-intercept $\Rightarrow y=0$

$2x+3(0)=12$

$2x=12 \Rightarrow x=\frac{12}{2}=6$

x-intercept (6,0)

y-intercept $\Rightarrow x=0$

$2(0)+3y=12$

$y=\frac{12}{3}=4$

(0, 4)

By sol

---

example: find the equation of line passing the point $(-4,2)$ and slope $=5$

x_1 y_1

Sol

A) $y=22x+5$
B) $y=5x+22$
C) $y=-5x-22$
D) $y=-5x+22$

$y-y_1=m(x-x_1)$

$y-2=5(x-(-4))$

$y-2=5(x+4)$

$y-2=5x+20$

$y=5x+20+2$

$y=5x+22$

example: The equation of line passing Through $(2,5)$ and $(3,2)$
$x_1\ y_1$ $x_2\ y_2$

الحل

A) $y = 5x + 11$

B) $y + 3x = 11$

C) $y = 3x - 11$

D) $y = -5x - 11$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2-5}{3-2}$$

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

$$y - y_1 = m(x - x_1)$$

$$y - 5 = -3(x - 2)$$

$$y - 5 = -3x + 6$$

$$y = -3x + 6 + 5$$

$$y = -3x + 11$$

الجواب هو "B" $y + 3x = 11$

---

example: The equation of line passing Through $(-3, +2)$ and parallel of line $y - 2x = 4$

الحل

A) $y = 2x + 8$

B) $y = 8x + 2$

C) $y = 5x + 3$

D) $3x + y = 7$

$$y - 2x = 4$$

$$\rightarrow y = 2x + 4$$

$$m = 2$$

إذا كانت توازي "parallel" ميل المستقيم الذي نبحث عن معادلته $m = 2$

$$y - y_1 = m(x - x_1)$$

$$y - 2 = 2(x + 3)$$

$$y - 2 = 2x + 6 \Rightarrow y = 2x + 6 + 2$$

$$y = 2x + 8$$

الجواب هو "A"

example: find the equation of line passing Through $(-2, 1)$ and perpendicular The line $2x+3y=8$

الحل

$3y = -2x + 8$

$y = \frac{-2}{3}x + \frac{8}{3}$

A) $y = \frac{5}{2}x + 2$

B) $y = \frac{3}{2}x + 4$

C) $y = -6x + 2$

D) $y = 2x - 5$

إذا ميل المستقيم هو $-\frac{2}{3}$ وعلاقة عامد إذا ميل المستقيم الذي نبحث عنه هو $m = +\frac{3}{2}$

$y - y_1 = m(x - x_1)$

$y - 1 = \frac{3}{2}(x - (-2))$

$y - 1 = \frac{3}{2}(x + 2)$

$2y - 2 = 3(x + 2)$

$2y - 2 = 3x + 6 \Rightarrow 2y = 3x + 6 + 2$

$2y = 3x + 8$

$y = \frac{3}{2}x + \frac{8}{2} = \frac{3}{2}x + 4$ الجواب هو B

---

example: The lines are parallel is

الحل

A) $y - 3x = 2$, $2y + 2x = 5$ → $y = 3x + 2$, $m = 3$; $2y = -2x + 5$, $y = -\frac{2}{2}x + \frac{5}{2}$, $m = -1$

B) $y + 2x = 3$, $2y + 4x = 2$ → $y + 2x = 3$, $y = -2x + 3$, $m = -2$; $2y + 4x = 2$, $2y = -4x + 2$, $y = -2x + 1$, $m = -2$

C) $2x + 3y = 1$, $y - 5x = 7$

الجواب هو B

example: The pairs lines are perpendicular

A) $y+5x=3$, $y+3x=2$

B) $2y+4x=4$, $y+2x=5$

c) $3x+2y=7$, $y-\frac{3}{2}x=8$

الحل

نجرب في الخيار A نريد
المستقيمين المتعامدين

$y+5x=3$
$y=-5x+3$
$m=-5$

$y+3x=2$
$y=-3x+2$
$m=-3$

غير متوازيين وغير متعامدين

نجرب بالخيار B

$2y+4x=4$
$2y=-4x+4$
$y=-2x+2$
$m=-2$

$y+2x=5$
$y=-2x+5$
$m=-2$

هذا متوازيان وهي نريد متعامدين

نجرب بالخيار C

c) $2y=-3x+7$
$y=\frac{-3}{2}x+\frac{7}{2}$
$m_1=\frac{-3}{2}$

$y-\frac{3}{2}x=8$
$y=\frac{3}{2}x+8$
$m_2=\frac{3}{2}$

الخيار الصحيح

المستقيمان متعامدان $m_1 \cdot m_2=\frac{-3}{2}\cdot\frac{2}{3}=-1$

---

example: The line with Slope = 0 is

A) $x=3$

B) $y=2x+5$

c) $y=6x$

D) $y=8$

الخيار هو D

example: The line with slope: undefine

A) $X=2$

B) $y=2X+5$

C) $y=6$

D) $y=X$

الجواب هو A

---

example: The vertical passing The point (2,5) is

A) $X=5$

B) $y=2$

C) $X=2$

D) $y=5$

vertical line $X=2$

horizontal line $y=5$

الجواب هو C

---

example: The slope of line passing Through $(3,5)$ and $(2,-4)$
(x_1, y_1) (x_2, y_2)

الحل

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4-5}{2-3} = \frac{-9}{-1} = \frac{9}{1}$$

$$m = 9$$

(A) $m = 3$

(B) 5

(C) 8

(D) 1

(E) 9

(E) الجواب هو

---

example: The equation of line passing through $(3,5)$ and slope $= 7$
(x_1, y_1)

الحل

$$y - y_1 = m(x - x_1)$$

$$y - 5 = 7(x - 3)$$

$$y - 5 = 7x - 21$$

$$y = 7x - 21 + 5$$

$$y = 7x - 16$$

(D) الجواب هو

(A) $y = 5x - 16$

(B) $y = 7x - 21$

(C) $y = 3x + 4$

(D) $y = 7x - 16$

(E) $y = 2x + 3$

example: The equation through $(3,2)$ and $(4,6)$

$x_1\ y_1$ $\quad$ $x_2\ y_2$

الحل

$$m=\frac{y_2-y_1}{x_2-x_1}=\frac{6-2}{4-3}=\frac{4}{1}=4$$

$$y-y_1=m(x-x_1)$$

$$y-2=4(x-3)$$

$$y-2=4x-12 \Rightarrow y=4x-12+2$$

$$\boxed{y=4x-10}$$

(A) $y=4x+10$

(B) $y=4x-10$

(C) $y=10x+4$

(D) $y=10x-3$

(E) $y=2x+8$

الجواب (B)

---

example: The equation of line passing through $(2,-3)$ and parallel $y=\frac{6}{5}x+3$

الحل

parallel = توازي = نفس الميل

$$y=\frac{6}{5}x+3 \Rightarrow \boxed{m=\frac{6}{5}}$$

$$y-y_1=m(x-x_1)$$

$$y+3=\frac{6}{5}(x-2)$$

$$5y+15=6(x-2) \Rightarrow 5y+15=6x-12$$

$$5y=6x-12-15 \Rightarrow$$

$$5y=6x-27 \Rightarrow \boxed{y=\frac{6}{5}x-\frac{27}{5}}$$

(A) $y=\frac{6}{5}x-\frac{27}{5}$

(B) $y=\frac{5}{6}x-3$

(C) $y=\frac{6}{5}x+4$

(D) $y=-\frac{6}{5}x+\frac{27}{5}$

الجواب (A)

مثال 1 : Find The slope for line passing Through $(3,1)$ and $(6,4)$
$x_1 \quad y_1 \qquad x_2 \quad y_2$

الحل

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-1}{6-3} = \frac{3}{3} = 1$$

الجواب هو (D)

(A) $m = 4$

(B) 2

(C) 5

(D) 1

---

example1 Find The slope of line $3x + y = 5$

الحل

$$3x + y = 5$$

$$y = -3x + 5$$

$$m = -3$$

الجواب هو (B)

(A) 1

(B) -3

(C) 4

(D) 5

مثال 2 example: Find The equation of line passing through $(2,5)$ and slope $= 7$

الحل

$$y - y = m(x - x_1)$$

$$y - 5 = 7(x - 2)$$ الجواب هو (D)

$$y - 5 = 7x - 14$$

$$y = 7x - 14 + 5$$

$$y = 7x - 9$$

(A) $y = 7x - 9$

(B) $y = -7x + 9$

(C) $y = 5x + 3$

(D) $y = 4x + 2$

example: Find the equation of line passing through $(3,4)$ and $(2,6)$
$x_1\ y_1$ $x_2\ y_2$

الحل

نكتب معادلة الخط المستقيم
(نحتاج ميل ونقطة) والنقطة معطيه

نوجد الميل

$$m=\frac{y_2-y_1}{x_2-x_1}=\frac{6-4}{2-3}=\frac{2}{-1}=-2$$

$$y-y_1=m(x-x_1)$$
$$y-4=-2(x-3)$$
$$y-4=-2x+6$$
$$y=-2x+6+4$$
$$y=-2x+10$$

(A) $y=2x-10$

(B) $y=-2x+10$

(C) $y=6x+8$

(D) $y=8x-6$

الجواب ب

---

example: Find the equation of line passing through $(6,2)$ and parallel $y-3x=5$

الحل

$$y=3x+5$$

$$\boxed{m=3}$$

$$y-y_1=m(x-x_1)$$
$$y-2=3(x-6)$$
$$y-2=3x-18$$
$$y=3x-18+2$$
$$y=3x-16$$

الجواب A

(A) $y=3x-16$

(B) $y=6x+8$

(C) $y=4x+8$

(D) $y=x+1$

example: Find The equation of line passing throug (3,-1) and perpendicular $2x-3y=5$

Ⓐ $y=\frac{3}{2}x-\frac{7}{2}$

Ⓑ $y=\frac{7}{2}x+\frac{3}{2}$

Ⓒ $y=-\frac{3}{2}x+\frac{7}{2}$

Ⓓ $y=-3x+7$

الحل

$-3y=-2x+5$

$y=\frac{-2}{-3}x+\frac{5}{-3}$

$y=\frac{2}{3}x-\frac{5}{3}$

$m=\frac{2}{3}$

$m=\frac{-3}{2}$ عبارة بعاكس

$y-y_1=m(x-x_1)$

(2x) ضرب $y+1=-\frac{3}{2}(x-3)$

$2y+2=-3x+9 \Rightarrow 2y=-3x+9-2$

$2y=-3x+7$

$y=\frac{-3}{2}x+\frac{7}{2}$

الجواب هو Ⓒ

---

example: The pair lines are parallel.

Ⓐ $x-2y=3$, $y=2x+4$

Ⓑ $y-2x=5$; $y=2x+7$

Ⓒ $x+3y=4$, $x=5y+6$

Ⓓ $y-6x=4$, $6y+4x=5$

الحل:

لكتابة المستقيمان المتوازيان

$-2y=-x+3$ | $y=2x+4$

$y=\frac{1}{2}x+\frac{3}{2}$

$m=1/2$ | $m=2$

not parallel

$y-2x=5$ | $y=2x+4$

$y=2x+5$ | $m=2$

$m=2$

is parallel

الجواب هو Ⓑ .

example: The lines are perpendicular

الحل

كيف نتحقق ان المستقيمان

(A) $y=5x+4$, $y=3x+2$

$y=5x+4$, $m=5$ | $y=3x+2$, $m=3$

not perpendicular

(B) $x+y=4$; $y=2x+8$

$x+y=4$, $y=-x+4$, $m=-1$ | $y=2x+8$, $m=2$

not perpendicular

(C) $y=2x+5$, $x+2y=7$

$y=2x+5$, $m=2$ | $x+2y=7$, $2y=-x+7$, $y=\frac{-1}{2}x+7$, $m_2=\frac{-1}{2}$

(D) $y=4x+1$, $y=5x+2$

المستقيمان متعامدان اذا $m_2=\frac{-1}{m_1}$

---

example: Find x-intercept and y-intercept for $2x+4y=20$

الحل

(A) (10,0), (0,5)

(B) (0,10), (5,0)

(C) (10,0), (5,0)

(D) (-10,0), (0,-5)

x-intercept $\Rightarrow y=0$

$2x+4(0)=20$

$2x=20 \Rightarrow x=\frac{20}{2}=10$

x intercept (10,0)

y-intercept $\Rightarrow x=0$

$2(0)+4y=20$

$4y=20$

$y=\frac{20}{4}=5$ (0,5)

الجواب (A)

example : The line with slope = 0 is

(A) $x = 3$
(B) $y = 5$
(C) $y = x$
(D) $y = 6x + 4$

الجواب هو (B)
لانه ان المستقيم هنا هو
horizontal line.

---

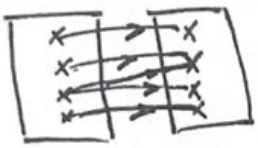
example : The vertical line passing The point (3, 6)

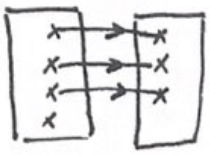
(A) $x = 3$
(B) $x = 2$
(C) $x = 1$
(D) $x = 4$

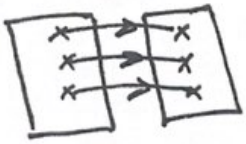
الحل
(A) الجواب $x = 3$
لانه في صيغة الخارج
slope = undifine

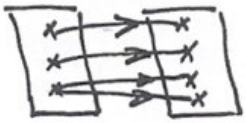
1.2.1

example: determine the function from the Table.

(a) 

(b) 

(c) 

(d) 

الجواب هو (c)

---

example: determine the function from:

(A) $S=\{(2,1),(3,2),(5,1),(2,1)\}$.

(B) $S=\{(1,1),(2,2),(1,4),(1,5)\}$.

(C) $S=\{(1,3),(2,5),(6,4),(7,3)\}$.

(D) $S=\{(2,1),(5,2),(4,2),(5,3)\}$.

الجواب هو (C)

---

example: determine the y as function of x

(A) $y=2x+6$

(B) $y^2+x^2=2$

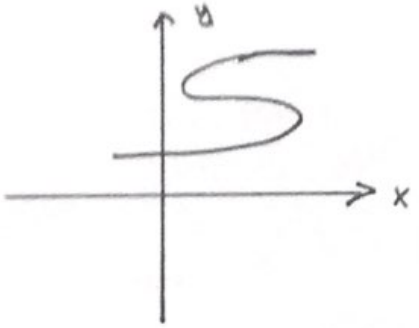
(C) $|y|+6x=4$

(D) $y^3+y=6x$

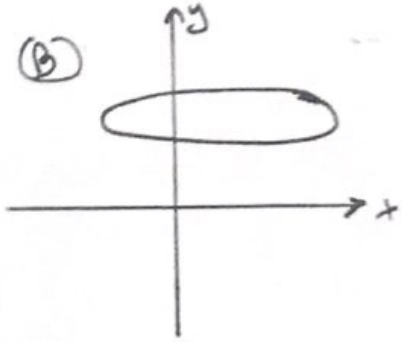
الجواب هو (A)

example: determine The Fundtion from The graph.

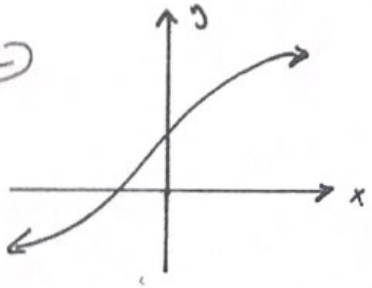
(A)



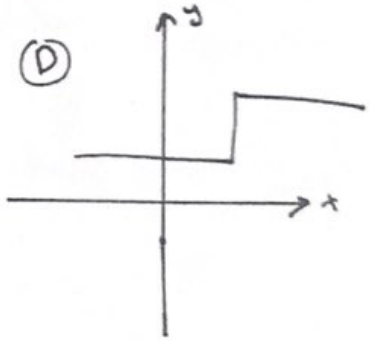
(B)



(C)



(D)



الجواب هو (C)

---

example: Find The Domain for: $f(x)=\frac{2x+5}{2x-8}$

الحل

$f(x)=\frac{2x+5}{2x-8}$

$2x-8=0$

$2x=8$

$x=\frac{8}{2}=4$

(A) $(-\infty, 4]$

(B) $(-\infty,4]\cup[4,+\infty)$

(C) $[4,+\infty)$

(D) $(-\infty,4)\cup(4,+\infty)$

The Domain $(-\infty,4)\cup(4,+\infty)$

الجواب هو (D)

example: Find The Domain: $f(x)=2x^2+4x$

الحل

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

كثيرة حدود

Domain $(-\infty,+\infty)$

(A) $(-\infty,4)$

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

(C) $(-\infty,+\infty)$

(D) $(4,+\infty)$

---

example: Find The Domain: $f(x)=\dfrac{2x+4}{x^2-9}$

الحل

$x^2-9=0 \Rightarrow x^2=9$

$x=\pm\sqrt{9}=\pm 3$

Domain $(-\infty,-3)\cup(-3,3)\cup(3,+\infty)$

الجواب (E)

(A) $(-\infty,9)\cup(9,+\infty)$

(B) $(-\infty,3)\cup(3,+\infty)$

(C) $(-\infty,3)$

(D) $(3,+\infty)$

(E) $(-\infty,-3)\cup(-3,3)\cup(3,+\infty)$

---

example: The Domain of $f(x)=\dfrac{2x-1}{x^2-5x-14}$

الحل

$x^2-5x-14=0$

$(x-7)(x+2)=0$

$x-7=0 \Rightarrow x=7$

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

The Domain

$(-\infty,-2)\cup(-2,7)\cup(7,+\infty)$

الجواب (B)

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

(B) $(-\infty,-2)\cup(-2,7)\cup(7,+\infty)$

(C) $(-\infty,7)\cup(7,+\infty)$

(D) $(-\infty,-2)\cup(7,+\infty)$

(E) $(-\infty,7)\cup(2,+\infty)$

example: Find The Domain: $f(x)=\sqrt{2x-8}$

(A) $(-\infty, 4]$
(B) $(-\infty, +\infty)$
(C) $[4, +\infty)$
(E) $(4, +\infty)$

الحل

$2x-8 \geq 0 \Rightarrow 2x \geq 8$

$x \geq \frac{8}{2} = 4$

Domain $[4, +\infty)$

(C) الجواب هو

---

example: Find The Domain

$$f(x)=\frac{5x+1}{\sqrt{4x-12}}$$

(A) $(-\infty, 3)$
(B) $(3, +\infty)$
(C) $(-\infty, 3) \cup (3, +\infty)$
(D) $[3, +\infty)$

لان المقام بالجذر

الحل

$4x-12>0$

$4x>12$

$x>\frac{12}{4}=3$

Domain $(3, +\infty)$

(B) الجواب هو

---

example: Find The Domain

$$f(x)=\sqrt{7-x}$$

(A) $(-\infty, 7)$
(B) $(-\infty, 7]$
(C) $(7, +\infty)$
(D) $[7, +\infty)$

الحل

$7-x>0 \Rightarrow$

$-x>-7$

$x<7$

Domain $(-\infty, 7)$

(A) هو الحل

example: if $f(x)=\frac{2x+4}{5x+2}$ find $f(2)$

الحل $f(2)=$

$$f(2)=\frac{2(2)+4}{5(2)+2}=\frac{4+4}{10+2}=\frac{8}{12}$$

$$\frac{8\div 2}{12\div 2}=\frac{4\div 2}{6\div 2}=\frac{2}{3}$$

(A) $\frac{3}{2}$

(B) $\frac{2}{3}$

(C) 4

(D) 5

(B) الجواب هو

---

example: if $f(x)=5x^2+4x$

find $f(2a)$

الحل

$$f(2a)=5(2a)^2+4(2a)$$

$$=5(4a^2)+8a$$

$$=20a^2+8a$$

(A) $20a^2+8a$

(B) $4a^2+5a$

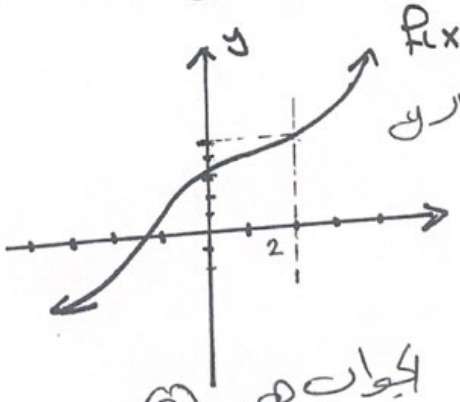
(C) $10a^2+8a$

(D) $4a^2$

(A) الجواب هو

---

example: From the graph find $f(2)$



نرسم عند $x=2$ مستقيم يوازي محور الـ y يقاطع مع الدالة ونسقط على محور الـ y الناتج هو $y=5$

(A) 2

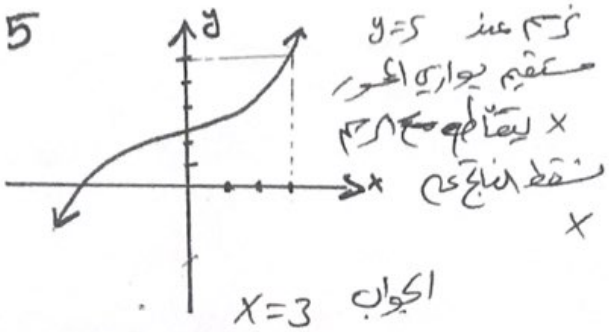
(B) 5

(C) 4

(D) 1

(B) الجواب هو

example: From The graph find value of x for $f(x) = 5$



(A) $X=1$

(B) $X=3$

(C) $X=6$

(D) $X=-2$

---

example: if $f(x) = 3x+7$, $g(x) = 2x+8$

Find $f(2) + 4\,g(1)$

الحل

$f(2) = 3(2)+7 = 13$

$g(1) = 2(1)+8 = 10$

$= f(2) + 4\,g(1)$

$= 13 + 4(10) = 13+40$

$= 53$

الجواب هو (C)

---

example: The Domain for relation

$S = \{(1,3),(2,7),(8,2),(9,10)\}$.

(A) $= \{3, 7, 2, 10\}$.

(B) $= \{1, 3, 2, 7\}$.

(C) $= \{1, 2, 8, 9\}$.

(D) $= \{2, 3, 10\}$.

الحل

الجواب هو (C)

1) example: if $f(x)=3x+4$, $g(x)=6x+8$

find $(f\cdot g)(x)$

(A) $18x^2+32$

(B) $18x^2+48x+32$

(C) $18x^2+32x$

(D) $18x^2+48x$

الحل

$(f\cdot g)(x) = f(x)\cdot g(x)$

$= (3x+4)(6x+8)$

$= 18x^2+24x+24x+32$

$= 18x^2+48x+32$

الجواب هو (B)

---

example: if $f(x)=2x^2+6x+7$, $g(x)=4x^2+5x+6$

find $(f+g)(x)$

(A) $6x^2+11x+13$

(B) $11x+13$

(C) $2x^2+11x+13$

(D) $6x^2+13$

الحل

$(f+g)(x) = f(x)+g(x)$

$= 2x^2+6x+7+4x^2+5x+6$

$= 6x^2+11x+13$

الجواب هو (A)

---

2) example: if $f(x)=2x+6$, $g(x)=4x+8$

find $\frac{f}{g}(2)$

(A) $\frac{3}{5}$

(B) $\frac{5}{8}$

(C) $\frac{3}{4}$

الحل

$\frac{f}{g}(2) = \frac{f(2)}{g(2)} = \frac{2(2)+6}{4(2)+8} = \frac{10}{16} \div ? \; \frac{5}{8}$

الجواب هو (B)

example: if $f(x)=\sqrt{x+2}$, $g(x)=5x+2$

find $(f\cdot g)(2)$

الحل

(A) 2
(B) 12
(C) 25
(D) 24

$(f\cdot g)(2)=f(2)\cdot g(2)$

$=(\sqrt{2+2})(5(2)+2)$

$(\sqrt{4})(12)$

$(2)(12)=24$

(D) الجواب

---

example: if $f(x)=\sqrt{2x+10}$, $g(x)=\sqrt{4-x}$

find The Domain $(f+g)(x)$

الحل

(A) $[-5,+\infty)$
(B) $(-\infty,4]$
(C) $(-\infty,+\infty)$
(D) $[-5,+4]$

Domain $(f+g)(x)$

= Domain $f \cap$ Domain g

Domain $f(x)$: $2x+10\geq 0$

$\Rightarrow 2x\geq -10 \Rightarrow x\geq \frac{-10}{2}=-5$

Domain $f(x)=[-5,+\infty)$

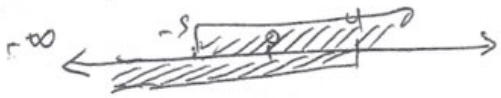
Domain $g(x)$: $4-x\geq 0 \Rightarrow -x\geq -4$

$\div(-1)$ $x\leq 4$

Domain $g(x)=(-\infty,4]$

Domain $(f+g)(x)=[-5,+\infty)\cap(-\infty,4]$

(D) الجواب $=[-5,4]$



example: if $f(x)=2x^2+5x$, $g(x)=6x^2+4x$

find Domain $(f\cdot g)(x)$

الحل

Domain $(f\cdot g)(x)$ = Domain $f \cap$ Domain g

Domain $f(x)=(-\infty,+\infty)$

Domain $g(x)=(-\infty,+\infty)$

Domain $(f\cdot g)(x)=(-\infty,+\infty)\cap(-\infty,+\infty)$

$=(-\infty,+\infty)$ (A) الجواب

(A) $(-\infty,+\infty)$

(B) $(-\infty,4]$

(C) $[4,+\infty)$

(D) $(-\infty,4)\cup(4,+\infty)$

---

example: if $f(x)=\sqrt{x-5}$, $g(x)=-6x+7$

find Domain $(f-g)(x)$

الحل

Domain $f(x)$: $x-5\geq 0 \Rightarrow x\geq 5$

$[5,+\infty)$

Domain $g(x)=(-\infty,+\infty)$

Domain $(f-g)(x)=[5,+\infty)\cap(-\infty,+\infty)$

$=[5,+\infty)$

(A) الجواب

(A) $[5,+\infty)$

(B) $(-\infty,5]$

(C) $(5,+\infty)$

(D) $(-\infty,+\infty)$

---

example: if $f(x)=3x+5$, $g(x)=4x+3$

find $(f\cdot g)(1)$

الحل

$(f\cdot g)(1)=f(1)\cdot g(1)$

$f(1)=3(1)+5=8$

$g(1)=4(1)+3=7$

$(f\cdot g)(1)=(8)(7)=56$

الجواب B

(A) 3

(B) 56

(C) 9

(D) 20