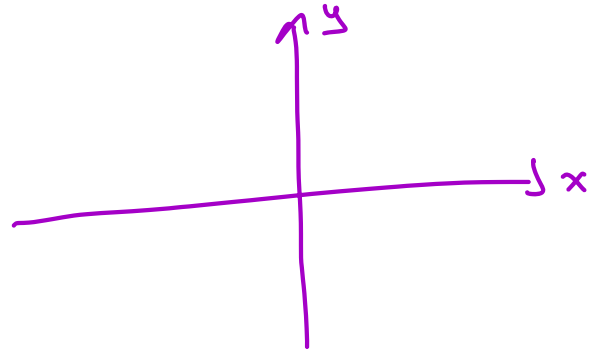


FONKSİYON

$f: A \rightarrow B$
 $f(x)$
Tanın
x'in
olduğu
Görüntü
Sonuç
olduğu
yer



$f: [2, 6] \rightarrow B$
 $f(x) = 2x + 3$
 $f(2) = 2 \cdot 2 + 3 = 7$
 $f(6) = 2 \cdot 6 + 3 = 15$
B kümesi?
 $[7, 15]$
Sonuç
 $f(x)$
y

$f(x) = 2x + 4$ ise $f(3) = 2 \cdot 3 + 4 = 10$
 $f(-1) = 2 \cdot (-1) + 4 = -2 + 4 = 2$
 $f(a) = 14$ ise $a = ?$
 $2a + 4 = 14$
 $2a = 10$ $a = 5$

$f(x) = 3x + 6$ ise $\frac{f(7) - f(2)}{f(3)} = \frac{27 - 12}{15} = \frac{15}{15} = 1$
 $f(7) = 3 \cdot 7 + 6 = 27$
 $f(2) = 3 \cdot 2 + 6 = 12$
 $f(3) = 3 \cdot 3 + 6 = 15$

 Referans Fonk: (Doğrusal) (ici dışı Aynı) $f(x)=x$ $\odot$ içindeki ile dışındaki aynı!!

(1) $f: A \rightarrow B$ referans fonk. ise $\frac{\overbrace{f(2)}^2 + \overbrace{f(4)}^4}{\underbrace{f(3)}_3} = ? \quad \frac{2+4}{3} = \underline{\underline{2}}$

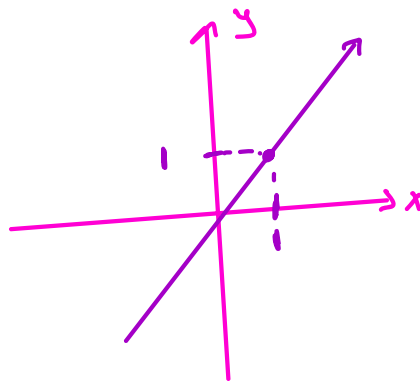
(2) $f: A \rightarrow B$ referans doğrusal fonk ise $f(x) = \overbrace{(a-2)}^0 x^2 + \overbrace{(b-3)}^1 x + \underbrace{c+4}_0$
 ise $a+b+c = ?$
 $a-2=0 \Rightarrow a=2$
 $b-3=1 \Rightarrow b=4$
 $c+4=0 \Rightarrow c=-4$

$$2+4+(-4) = \underline{\underline{2}}$$

(3) $f: A \rightarrow B$ referans doğrusal fonk. ise $f(x) = \underbrace{(a+3)}_0 x^2 + x \overbrace{(b-2)}^1 + \underbrace{c+2}_0$
 $a=?$
 $b=?$
 $c=?$
 $a+3=0 \Rightarrow a=-3$
 $b-2=1 \Rightarrow b=3$
 $c+2=0 \Rightarrow c=-2$

(4) $f: A \rightarrow B$ referans doğrusal fonk ise $f(x) = \underbrace{(a-2)}_0 x^2 + \underbrace{(b+3)}_0 x + \underbrace{c+2}_0$
 $a=2$
 $b=-3$
 $c=-1$
 $d=3$
 $b+3=0 \Rightarrow b=-3$
 $c+2=1 \Rightarrow c=-1$

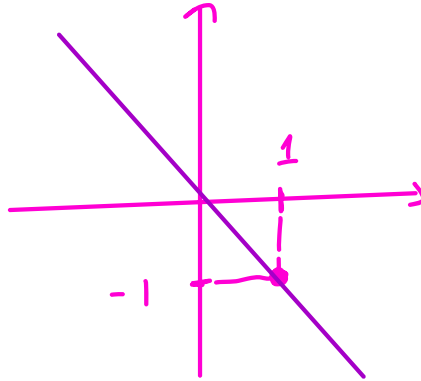
• $f(x)=x$ grafiği



Sabit terim yoksa Orijinden Geçer!

$x=1$ yazıp $y=?$

$f(x)=-x$ grafiği



• $f(x)=ax+b$ doğrusal fonksiyon.

① x 'in kuvveti 1 , $x^2, x^3, x^4, \dots$ gibi terimler olmaz
Ya verirse? Katsayıyı 0 yap!

Ör. $f: A \rightarrow B$ doğrusal fonksiyon $f(x) = \underbrace{(a-2)}_0 x^2 + 4x + 7$ ise $a=?$
 $a=2$

Ör. $f: A \rightarrow B$ doğrusal fonksiyon

$f(x) = (a+2)x^2 + ax + a$ ise
 $f(\underline{a}) = ?$

$a=-2$ $f(x) = -2x - 2$

$$f(-2) = \underline{-2 \cdot -2 - 2}$$
$$= 4 - 2 = \underline{2}$$

* 10 A
 12) $f: A \rightarrow B$ doğrusal fonk. $f(\underline{3}) = \underline{7}$ $f(\underline{5}) = \underline{17}$ ise $f(\underline{2}) = ?$

$$f(x) = ax + b$$

$$\begin{aligned} 3a + b &= 7 \rightarrow 3 \cdot 5 + b = 7 \\ 5a + b &= 17 \\ \hline -2a &= -10 \\ \underline{a} &= \underline{5} \end{aligned}$$

$$3 \cdot 5 + b = 7 \rightarrow 15 + b = 7 \rightarrow \underline{\underline{b = -8}}$$

$$f(x) = 5x - 8$$

$$f(2) = 5 \cdot 2 - 8 = \underline{\underline{2}}$$

! $f(x) = ax + b$ grafiği

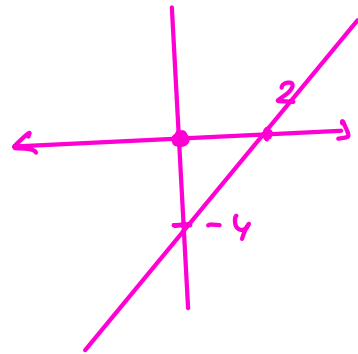
$$y = ax + b \quad x = 0 \quad y = ?$$

$$y = 0 \quad x = ?$$

12) $f(x) = 2x - 4$ grafiği?

$$y = 2x - 4$$

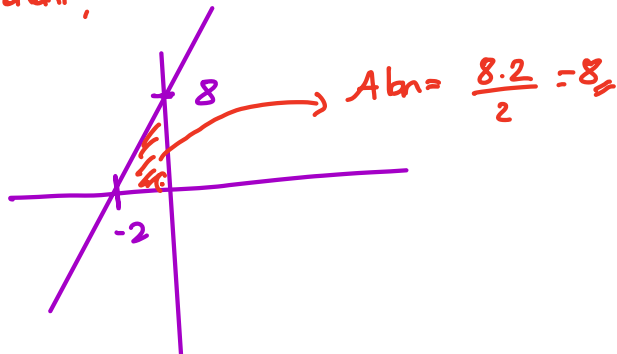
$$\begin{aligned} x = 0 &\rightarrow y = -4 \\ y = 0 &\rightarrow x = 2 \end{aligned}$$



12) $f(x) = 4x + 8$ grafiği ile eksenler arasında kalan bölgenin alanı?

$$x = 0 \quad y = 8$$

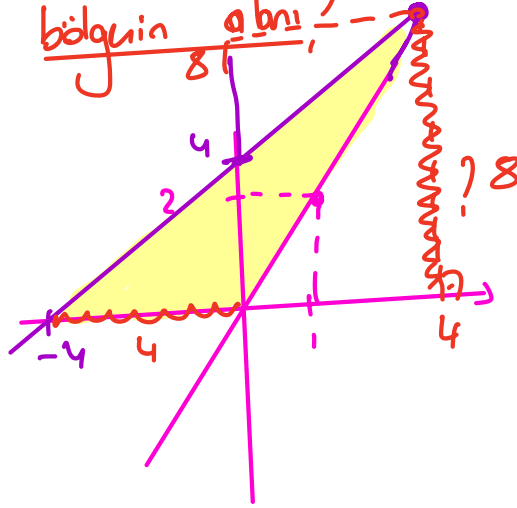
$$y = 0 \quad x = -2$$



✓ 11) $f(x) = 2x$ grafiği ile $f(x) = x+4$ grafiği ve x eksen
arasında kalan bölgenin alanı?

$$y = 2x$$

$$x = 1 \quad y = 2$$



$$y = x + 4$$

$$x = 0 \quad y = 4$$

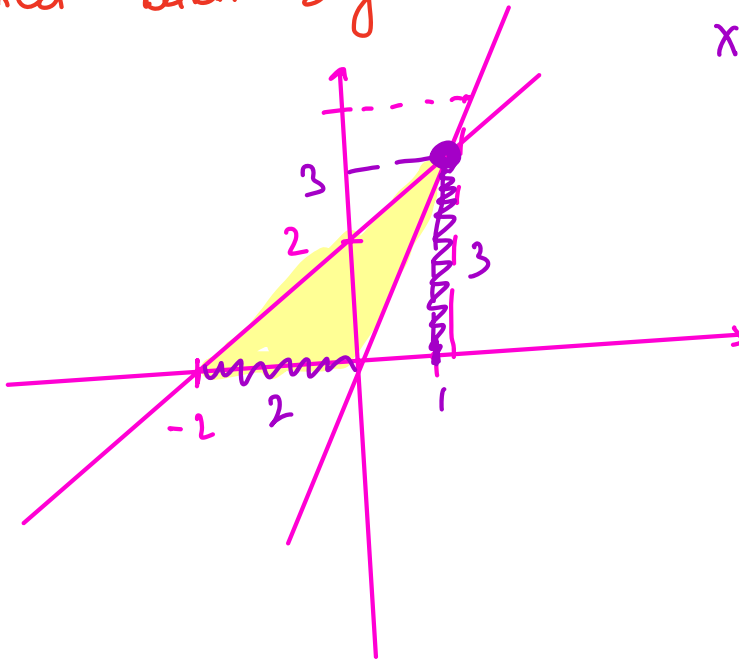
$$y = 0 \quad x = -4$$

$$2x = x + 4$$

$$x = 4$$

$$\frac{4 \cdot 8}{2} = \underline{\underline{16}}$$

12) $f(x) = x+2$ ise $f(x) = 3x$ grafikleri ve x eksen
arasında kalan bölgenin alanı?



$$x + 2 = 3x$$

$$2 = 2x$$

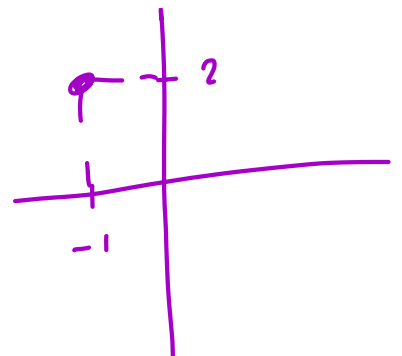
$$x = 1$$

$$\frac{3 \cdot 2}{2} = \underline{\underline{3}}$$

$f(x) = 2x+4$ ile $f(x) = x+3$ kesiştiği nokta?

$$2x + 4 = x + 3$$

$$x = -1 \quad y = 2$$



Parçalı fonksiyon

$$f(x) = \begin{cases} \text{---}, & x < a \\ \text{---}, & a \leq x < b \\ \text{---}, & b \leq x \end{cases}$$

$$f(x) = \begin{cases} \underline{2x+3}, & \underline{x} < 2 \\ 3, & 2 \leq \underline{x} < 7 \\ \underline{x+2}, & 7 \leq x \end{cases}$$

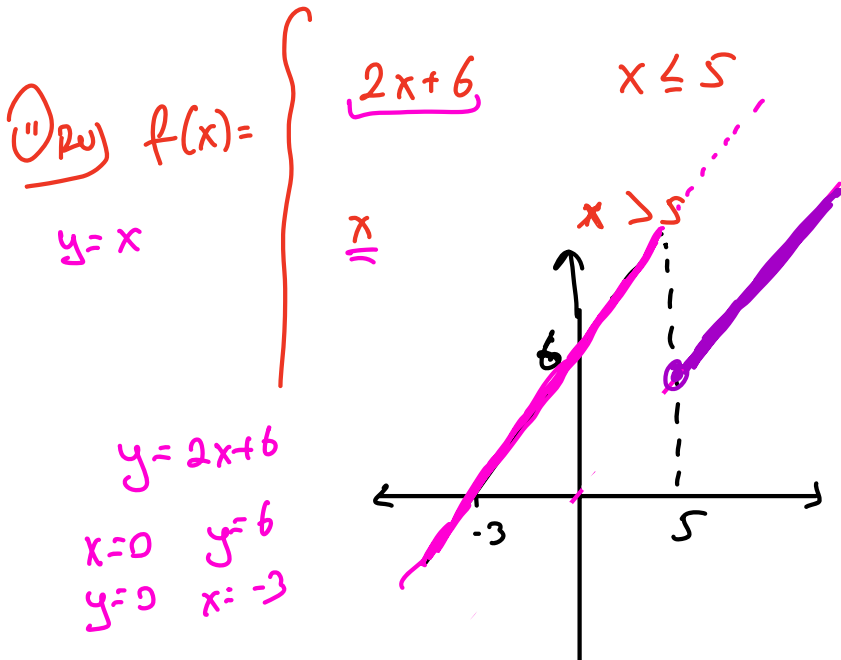
$$f(1) + f(2) + f(5) + f(8) = ?$$

$$\begin{aligned} f(1) &= 2 \cdot 1 + 3 = 5 \\ f(2) &= 3 \\ f(5) &= 3 \\ f(8) &= 10 \end{aligned} \quad \left. \vphantom{\begin{aligned} f(1) &= 2 \cdot 1 + 3 = 5 \\ f(2) &= 3 \\ f(5) &= 3 \\ f(8) &= 10 \end{aligned}} \right\} 5 + 3 + 3 + 10 = \underline{\underline{21}}$$

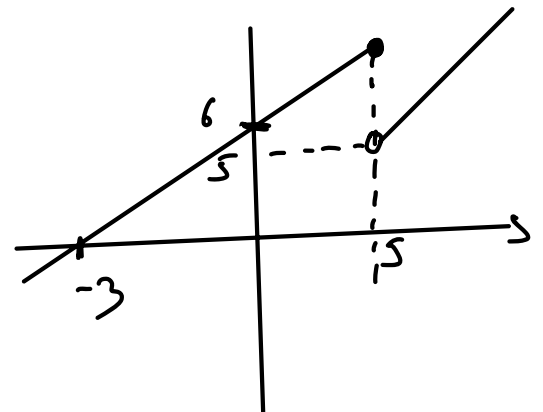
$$\text{Örnek } f: \begin{cases} 2x+4 & x < 5 \\ 3x+2 & x \geq 5 \end{cases}$$

$$\text{ör} \quad \frac{f(3) + f(6)}{f(5)} =$$

$$\begin{aligned} f(3) &= 2 \cdot 3 + 4 = 10 \\ f(6) &= 3 \cdot 6 + 2 = 20 \\ f(5) &= 3 \cdot 5 + 2 = 17 \end{aligned} \quad \frac{10 + 20}{17} = \frac{30}{17} //$$



ör bu fonksiyonun grafiği?



①) 2)

$f(x) = \left\{ \begin{array}{ll} \underline{2x+4} & x < 4 \\ \underline{x+2} & x \geq 4 \end{array} \right.$

$\underline{2x+4}$

$x < 4$

$\underline{x+2}$

$\underline{x \geq 4}$

$y = x+2$

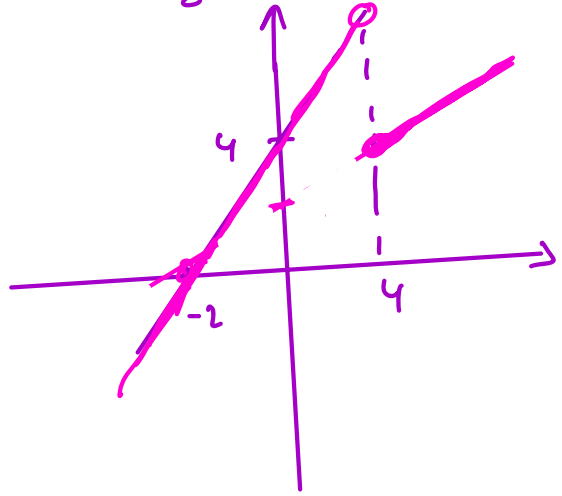
$x=0 \quad y=2$

$y=0 \quad x=-2$

$y = 2x+4$

$x=0 \quad y=4$

$y=0 \quad x=-2$



①) 2)

$f(x) = \left\{ \begin{array}{ll} \underline{2x+6} & x < 3 \\ \underline{4} & 3 \leq x < 5 \\ x+2 & 5 \leq x \end{array} \right.$

$\underline{2x+6}$

$x < 3$

4

$\underline{3 \leq x < 5}$

$x+2$

$\underline{5 \leq x}$

$y = 2x+6$

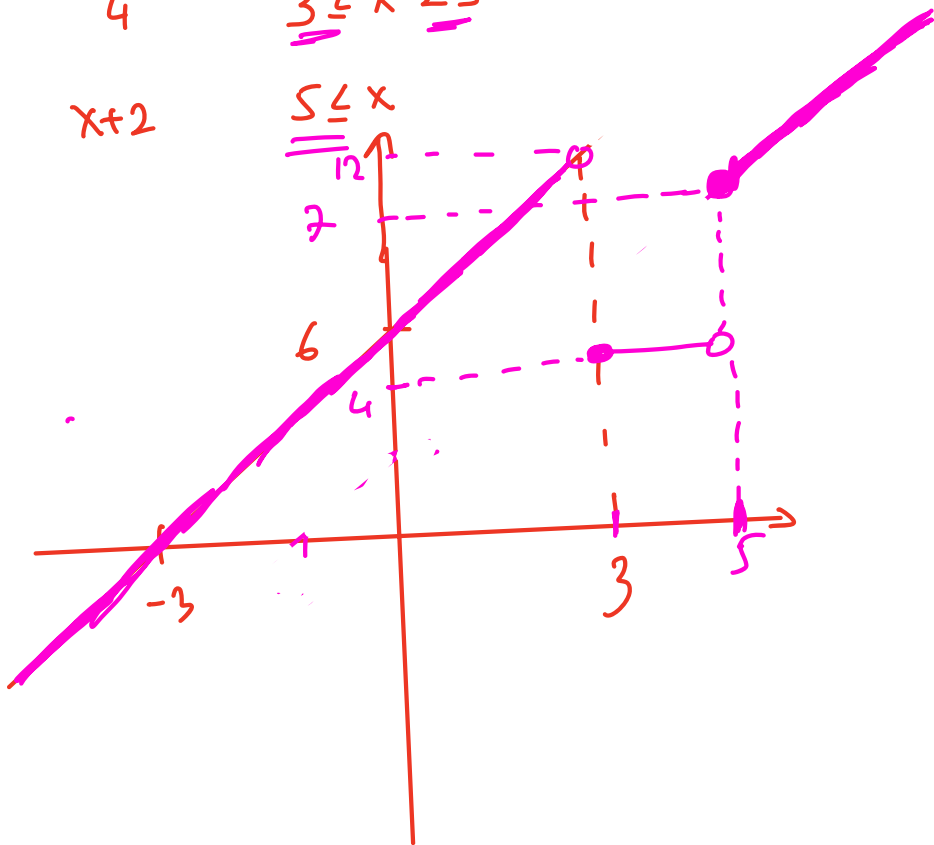
$x=0 \quad y=6$

$y=0 \quad x=-3$

$y = x+2$

$x=0 \quad y=2$

$y=0 \quad x=-2$



MUTLAK DEĞER

$$x > 0 \quad |x| = x$$

$$x < 0 \quad |x| = -x$$



İçerinin işareti + ise sakın
dokunma!

- ise önüne - yaz.

$$\underbrace{|\sqrt{3}-4|}_{-} = -(\sqrt{3}-4) \\ = -\sqrt{3}+4$$

$$x > 3 \quad \underbrace{|x-3|}_{+} = x-3$$

$$x < 3 \quad |x-3| = -(x-3) = -x+3$$

⊛ Mutlak değerin içini 0
yapan sayıya **Kritik Nokta**
denir.

$$|x-2| = \begin{cases} -x+2 & x < 2 \\ x-2 & x \geq 2 \end{cases}$$

$$\underbrace{|x+5|}_{\substack{- \\ +}} = \begin{cases} -x-5 & x < -5 \\ x+5 & x \geq -5 \end{cases}$$

⚠ $f(x) = |x|$ ifadesini parçalı fonk. olarak yazınız.

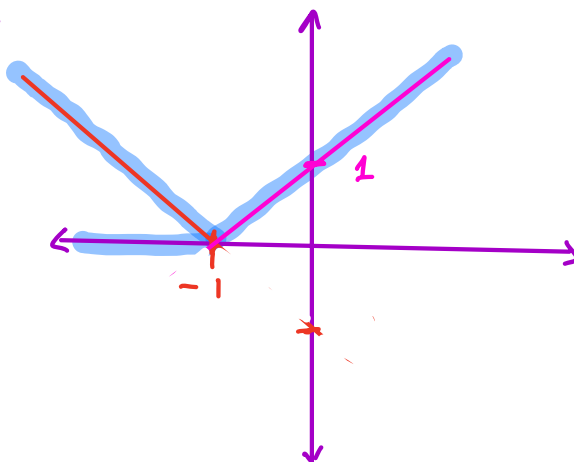
$$f(x) = \begin{cases} -x & , x < 0 \\ x & , x \geq 0 \end{cases}$$

$f(x) = |x+1|$ parçalı fonk. olarak yaz.

$$f(x) = \begin{cases} -x-1 & , x < -1 \\ x+1 & , x \geq -1 \end{cases}$$

$f(x) = |x+1|$ grafiğini çiz

$$f(x) = \begin{cases} -x-1 & x < -1 \\ x+1 & x \geq -1 \end{cases}$$



$y = -x-1$

$y = x+1$

$x=0 \quad y=-1$

$y=0 \quad x=-1$

$x=0 \quad y=1$

$y=0 \quad x=-1$

$f(x) = |x-2|$ grafiğini $x-2=0 \Rightarrow x=2$

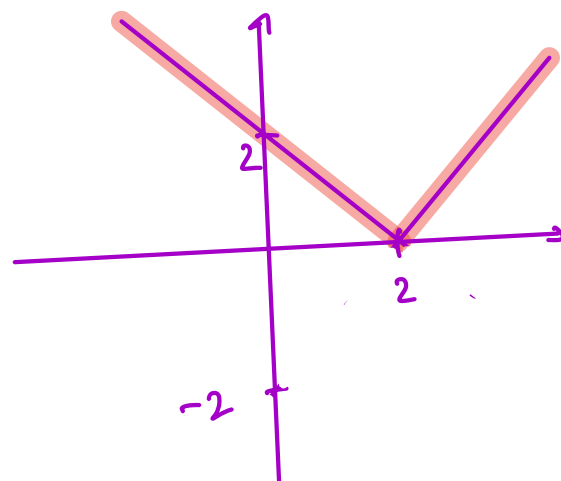
$$f(x) = \begin{cases} -x+2 & x < 2 \\ x-2 & x \geq 2 \end{cases}$$

$y = x-2$

$x=0 \quad y=-2$

$y=0 \quad x=2$

$0 = -x+2$
 $y = -x+2$
 $x=0 \quad y=2$
 $y=0 \quad x=2$



$f(x) = |2x+6|$ grafiğini $2x+6=0 \Rightarrow x=-3$

$2x+6=0$
 $x=-3$

$$f(x) = \begin{cases} -2x-6 & x < -3 \\ 2x+6 & x \geq -3 \end{cases}$$

$y = -2x-6$

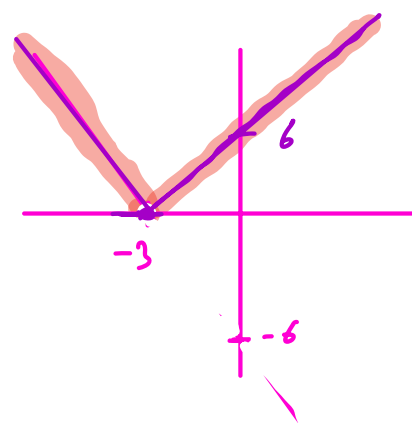
$x=0 \quad y=-6$

$y=0 \quad x=-3$

$y = 2x+6$

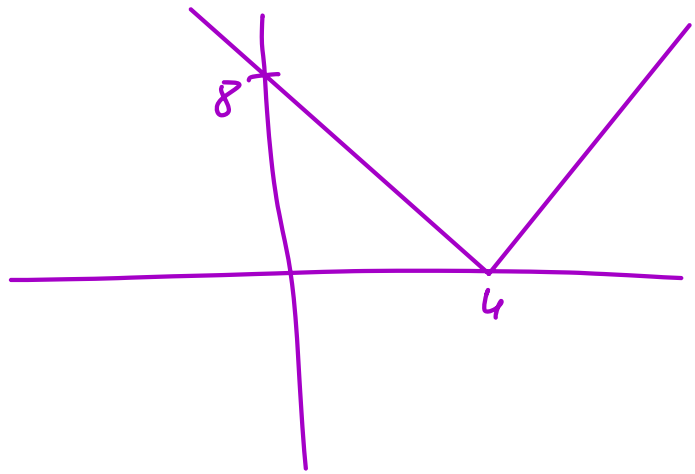
$x=0 \quad y=6$

$y=0 \quad x=-3$



$$f(x) = |2x-8| \quad \text{grafigi,}$$

$$f(x) = \begin{cases} -2x+8 & x < 4 \\ 2x-8 & x \geq 4 \end{cases}$$



Mini SINAV

① $f: A \rightarrow B$ doğrusal referans fonksiyon, $f(x) = \frac{(a-2)}{0}x^2 + \frac{(b-3)}{1}x + \frac{(c+2)}{0} + \frac{d-1}{0}$
 i.e. $a+b+c+d=?$

$$\begin{aligned} a-2=0 & \quad b-3=1 & \quad c+2=1 & \quad d-1=0 & \quad 2+4+(-1)+1=6 \\ a=2 & \quad \underline{b=4} & \quad \underline{c=-1} & \quad \underline{d=1} & \end{aligned}$$

② $f: A \rightarrow B$ doğrusal fonk. $f(x) = \frac{(a+2)}{0}x^2 + ax + a$ i.e. $f(\underline{a})=?$
 $f(-2)=?$

$$a+2=0$$

$$\underline{a=-2}$$

$$f(x) = -2x-2$$

$$\begin{aligned} f(-2) &= -2 \cdot (-2) - 2 \\ &= 4 - 2 = \underline{2} \end{aligned}$$

③ $f(x) = |x-1|$ in grafigi?

$$f(x) = \begin{cases} \underline{-x+1} & \underline{x < 1} \\ x-1 & x \geq 1 \end{cases}$$

