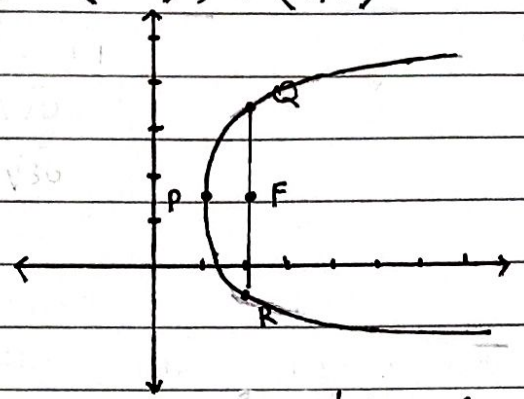
Mohammad Febryan Khamim
5002221072

No.: Date:

Tugas Parabola 1

Cari persamaan parabola yang punya titik puncak P dan titik - titik ujung Latum Rektum Q dan R di bawah ini.

5. P(2,3) ; Q(4,7) ; R(4,-1)



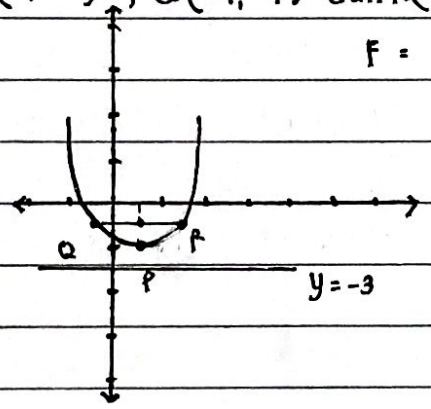
F = (4, 3)

Garis Direktriks → x = 0 | $(y-b)^2 = 4p(x-a)$

p = 2 | $(y-3)^2 = 8(x-2)$

// Jawab : $(y-3)^2 = 8(x-2)$

6. P(1,-2) ; Q(-1,-1) dan R(3,-1)



F = (1,-1) ; Garis Direktriks → y = -3

y = b - p → p = -2 - (-3) = 1

Persamaan : $(x-a)^2 = 4p(y-b)$

$(x-1)^2 = 4(y+2)$

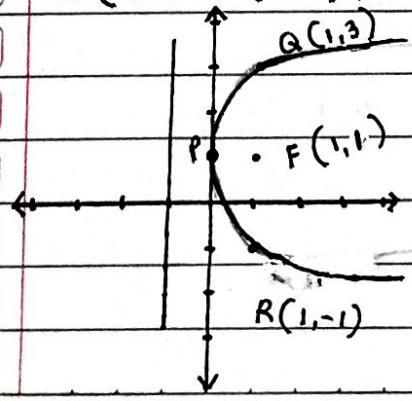
//

Jawab : $(x-1)^2 = 4(y+2)$

//

Tentukan persamaan parabola yang mempunyai titik - titik ujung latus rektum Q dan R serta direktriks g.

7. Q(1,3), R(1,-1), dan g : x = -1



P = (0,1)

Persamaan : $(y-b)^2 = 4p(x-a)$

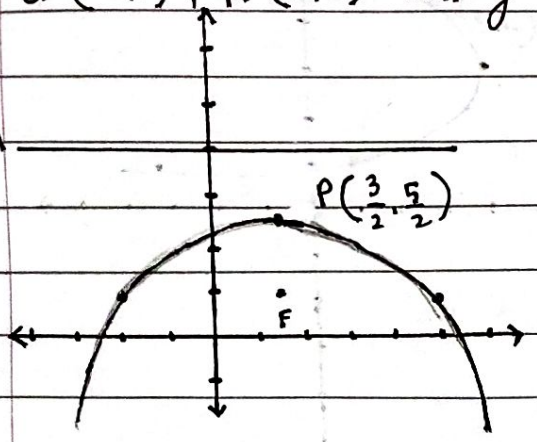
p = 1 $(y-1)^2 = 4(x-0)$

Jawab : $(y-1)^2 = 4x$

//

No.: Date:

8. Q (-2,1), R (5,1) dan $g : y = 4$



$= -p \rightarrow p = 1 - \frac{5}{2}$

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

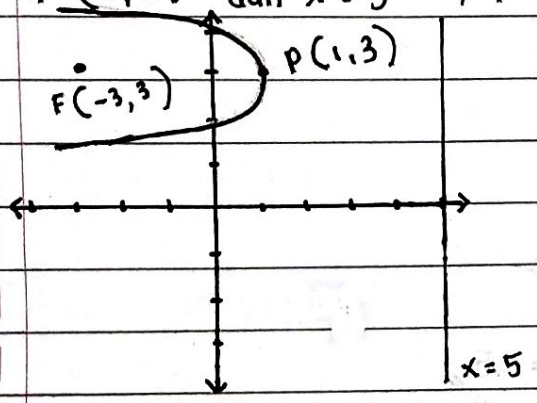
$(x-a)^2 = 4p(y-b)$

$(x-\frac{3}{2})^2 = 4(-\frac{3}{2})(y-\frac{5}{2})$

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

Tentukan persamaan parabola yang mempunyai titik puncak dan direktriks sebagai berikut.

9. P (1, 3) dan $x = 5 \rightarrow F = (-3, 3)$



$x = a - p \rightarrow p = 1 - 5$

$= -4$

Persamaan :

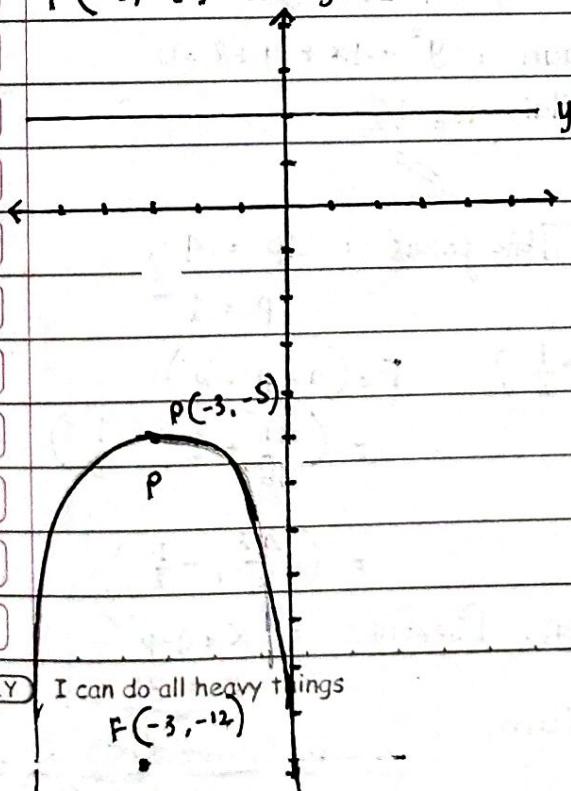
$(y-b)^2 = 4p(x-a)$

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

$(y-3)^2 = -16(x+3)$

Jawab : $(y-3)^2 = -16(x-1)$

10. P (-3, -5) dan $y = 2$



$P = (-3, -5)$ $y = b - p \rightarrow p = b - y$

$= -5 - 2$

$= -7$

Persamaan :

$(x-(-3))^2 = 4p(y-(-5))$

$(x+3)^2 = 4(-7)(y+5)$

$(x+3)^2 = -28(y+5)$

No.: Date:

11. Persamaan : $y^2 - 5x - 6y - 11 = 0$

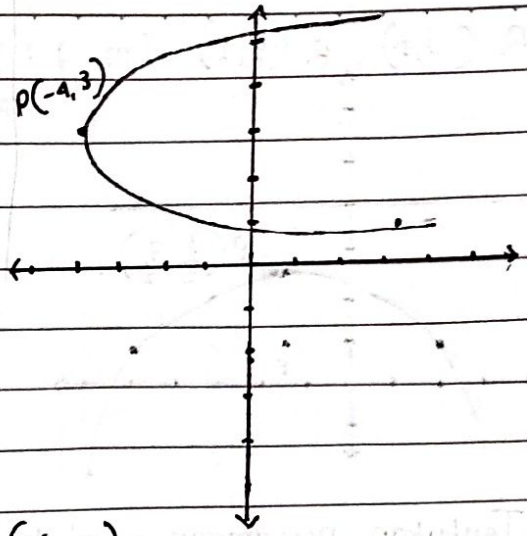
a. Koordinat titik puncak

↳ $y^2 - 6y = 5x + 11$ $+11$

$y^2 - 6y + 9 = 5x + 20$

$(y-3)^2 = 5(x+4)$

Titik puncak : $(-4, 3)$ //



b. Koordinat titik fokus

Bentuk Umum : $(y-b)^2 = 4p(x-a)$

$(y-3)^2 = 5(x+4)$

$4p = 5$ $F = (-2{,}75; 3)$

$p = 5/4$ //

c. Persamaan direktriks → $x = -5\frac{1}{4}$ //

d. Persamaan Sumbu Simetri → $y = 3$ //

e. Panjang Latus Rektum → $4|p| = 5$ //

12. Titik $(2, -1)$ terletak pada parabola : $y^2 - 4x + 2ky + 8 = 0$

$(-1)^2 - 4(2) + 2k(-1) + 8 = 0$

$1 - 8 + 8 - 2k = 0$

$1 - 2k = 0$

$2k = 1$

$k = 1/2$

Persamaan : $y^2 - 4x + y + 8 = 0$

a. Nilai $k = 1/2$ //

c. Titik fokus : $4p = 4$

$p = 1$

b. Koordinat titik puncak → $(\frac{31}{16}, -\frac{1}{2})$ //

$y^2 + y - 4x + 8 = 0$

$y^2 + y = 4x - 8 + \frac{1}{4}$

$y^2 + y + \frac{1}{4} = 4x - \frac{31}{4}$

$(y + \frac{1}{2})^2 = 4(x - \frac{31}{16})$

$F = (a+p, b)$

$= (\frac{31}{16} + 1, -\frac{1}{2})$

$= (\frac{47}{16}, -\frac{1}{2})$ //

d. Pers. Direktriks : $x = a - p$

$x = \frac{31}{16} - 1$

$= \frac{15}{16}$ //

e. Sumbu Simetri

$= y = -\frac{1}{2}$ //

f. Panjang Latus Rektum

↳ $4|1| = 4$ //

No.: Date:

13. $y^2 = -2x$

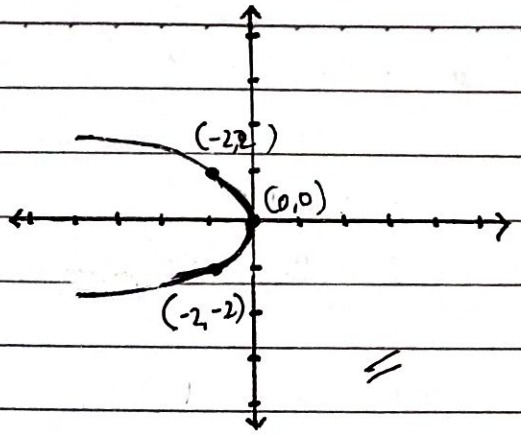
⇒ Tipot $x \rightarrow y = 0$

↳ $x = 0$

Tipot y = tipot x → (0,0)

$x = -2 \rightarrow y^2 = 4$

$y = 2 \vee y = -2$



14) $(x+1)^2 = 6y$

⇒ Titik puncak = (-1,0)

Tipot $x \rightarrow y = 0$

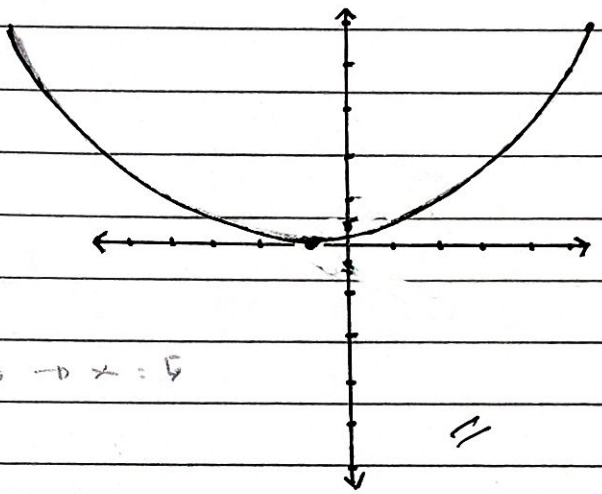
$(x+1)^2 = 0$

$x = -1$

Tipot $y = \rightarrow x = 0$

$6y = 1$ $y = 6 \rightarrow x = 5$

$y = 1/6$



15. $y^2 + 6x + 4y - 2 = 0$

$y^2 + 4y = -6x + 2 \quad +4$

$y^2 + 4y + 4 = -6x + 6$

$(y+2)^2 = -6(x-1)$

Titik Puncak = (1, -2)

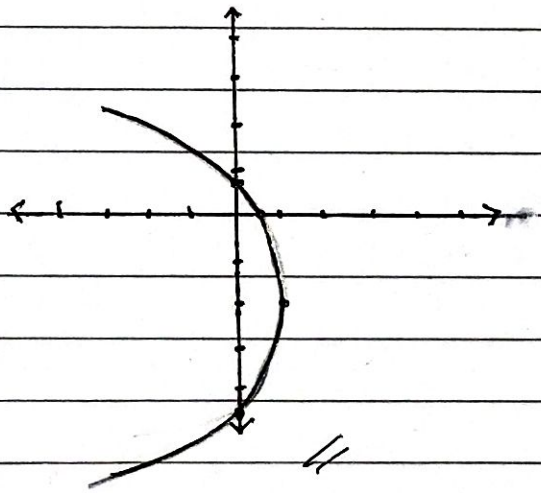
Tipot Sumbu $x \rightarrow y = 0$

$2^2 = -6(x-1)$

$4 = -6x + 6$

$-2 = -6x$

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



Tipot Sumbu $y \rightarrow x = 0$

$(y+2)^2 = -6(-1)$

$(y+2)^2 = 6$

KIKY Anything good nothing bad

$y+2 = \sqrt{6} \qquad y+2 = -\sqrt{6}$

$y = \sqrt{6} - 2 \qquad y = -\sqrt{6} - 2$