

POP QUIZ 5

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①. ② $4x^2 + y^2 = 36$

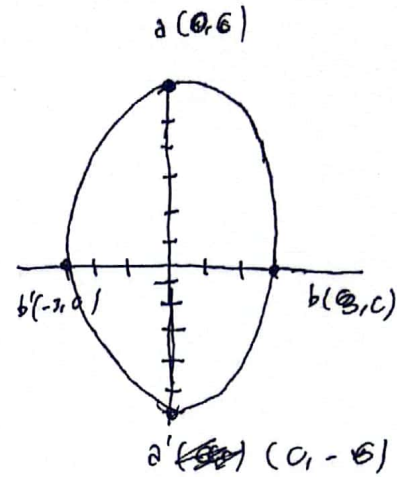
$\Rightarrow \frac{x^2}{9} + \frac{y^2}{36} = 1 \rightarrow \text{elips}$

$a^2 = 36 \quad a = \sqrt{36} \quad a = 6$

$b^2 = 9 \quad b = \sqrt{9} \quad b = 3$

$c = \sqrt{a^2 - b^2} \Rightarrow \sqrt{36 - 9} = \sqrt{27}$

Titik focus: $(0, \pm c)$
 $\hookrightarrow (0, \sqrt{27})$
 $\hookrightarrow (0, -\sqrt{27})$



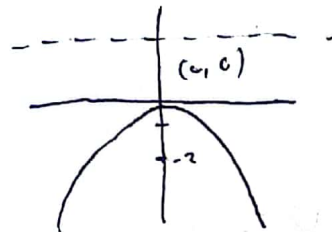
Vertex major $\Rightarrow (0, \pm a)$ Vertex minor $\Rightarrow (0, \pm b)$
 $\hookrightarrow (0, 6) \quad \Rightarrow (\pm b, 0)$
 $(0, -6)$

②. ③ $x = 2, y^2 = -8x$

$y^2 = -8x$

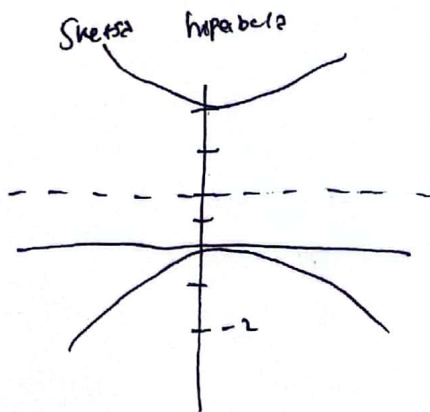
$y^2 = 4(-2)x$

$p = -2$



Directrix $= 2$

Directrix sama dan parabola



Foci $\hookrightarrow (0, -2)$
 $\hookrightarrow (0, 2)$

Parabola $\hookrightarrow (0, 0)$
 $\hookrightarrow (0, 0)$

8. a. $2x^2 - 12x + 4y^2 + 16y + 26 = 0$

$2(x^2 - 6x + 9) + 4(y^2 + 4y + 4) = -26 + 18 + 16$

$2(x-3)^2 + 4(y+2)^2 = 8$

$\frac{(x-3)^2}{4} + \frac{(y+2)^2}{2} = 1 \rightarrow \text{Bentuk } \boxed{\text{Elips}}$

Center = $(3, -2)$

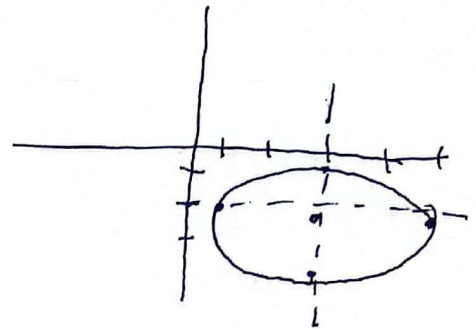
$a^2 = 4$
 $b^2 = 2$

$a = \sqrt{4}$
 $b = \sqrt{2}$

$a = 2$

(V: Verteks)

$C: \sqrt{a^2 - b^2}$
 $C: \sqrt{4 - 2}$
 $C: \sqrt{2}$



$V_{\text{major}} \Rightarrow (h \pm a, k)$

$\Rightarrow (3 \pm 2, -2)$
 $\rightarrow (5, -2)$
 $\rightarrow (1, -2)$

$V_{\text{minor}} \Rightarrow (h, k \pm b)$

$\Rightarrow (3, -2 \pm \sqrt{2})$
 $\rightarrow (3, -2 + \sqrt{2})$
 $\rightarrow (3, -2 - \sqrt{2})$

$e = \frac{c}{a} \Rightarrow \frac{\sqrt{2}}{2} \Rightarrow \frac{1}{\sqrt{2}} \rightarrow 0 < e < 1 \rightarrow \text{elips}$

4. (a) $y^2 = 12x$
 $\theta = \pi/3$

$x = u \cos \theta - v \sin \theta$

$x = 4 \cos(\pi/3) - v \sin(\pi/3)$

$x = 4 \cdot \frac{1}{2} - v \cdot \frac{\sqrt{3}}{2}$

$x = \frac{4 - \sqrt{3}v}{2}$

$y = u \sin \theta + v \cos \theta$

$y = 4 \sin(\pi/3) + v \cos(\pi/3)$

$y = 4 \cdot \frac{\sqrt{3}}{2} + v \cdot \frac{1}{2}$

$y = \frac{4\sqrt{3} + v}{2}$

$y^2 = 12x$

$\Rightarrow \left(\frac{4\sqrt{3} + v}{2}\right)^2 = 12 \left(\frac{4 - \sqrt{3}v}{2}\right)$

$\Rightarrow \frac{34^2 + 2\sqrt{3}uv + v^2}{4} = 6(4 - \sqrt{3}v)$
perlu diratahan (86)

$\Rightarrow 30^2 + 2\sqrt{3}uv + v^2 = 24v - 24\sqrt{3}v = 0$

$u = 2 \cdot \frac{1}{2}\sqrt{3} - \frac{1}{2}$

$v = 2 \cdot \frac{1}{2} + b \cdot \frac{1}{2}\sqrt{3}$

$9a^2 - 6\sqrt{3}ab + 3b^2 + 6a^2 + 6\sqrt{3}ab - 6b^2$

$\Rightarrow \frac{15a^2 - 3b^2}{4} - \frac{9ab}{2}$

$\frac{15a^2 - 3b^2 - 18ab}{4} = 1$

$\Rightarrow \frac{15a^2}{4} - \frac{3b^2 + 18ab}{4} = 1$

$\text{Cat } 20: \frac{B - C}{B} = \frac{3 - 1}{2\sqrt{3}} = \frac{2}{2\sqrt{3}}$

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

$20 = \pi/3$

$\theta = \pi/6$

$3 \left(\frac{2\sqrt{3}-b}{2}\right)^2 + 2\sqrt{3} \left(\frac{2\sqrt{3}-b}{2}\right) \left(\frac{a+b\sqrt{3}}{2}\right) - 24 \left(\frac{2\sqrt{3}-b}{2}\right)$

$+ 24\sqrt{3} \left(\frac{2\sqrt{3}-b}{2}\right)$

$\frac{-24\sqrt{3} + 24b + 24\sqrt{3} + 22b}{2}$