TUGAS KELOMPOK

RESPONSI 8

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Kelompok 9:

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Responsi 8

1 a. $4y + x^2$

$x^2 = -4y$

$x^2 = 4py$

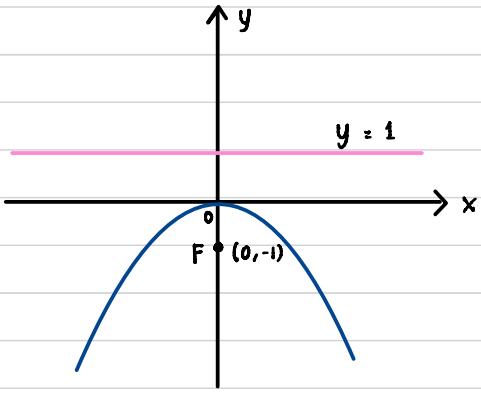
$p = -1 < 0$

titik fokus = $(0,-1)$

titik puncak = $(0,0)$

Direktris = $y = -p$

$y = -(-1) = 1$ //



b. $y^2 = 12x$

$y^2 = 4px$

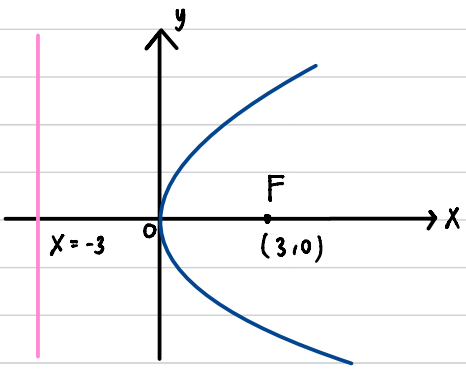
$p = 3 > 0$

titik fokus = $(3,0)$

titik puncak = $(0,0)$

Direktris = $x = -p$

$x = -3$ //



2. a) $\frac{x^2}{64} + \frac{y^2}{100} = 1$

$a^2 = 100$, $a = 10$

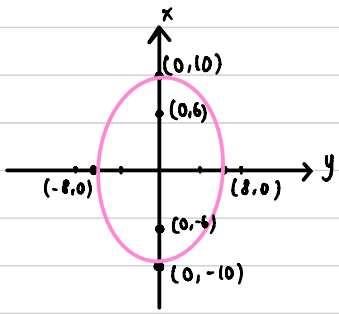
$b^2 = 64$, $b = 8$

$c = \sqrt{100 - 64} = \sqrt{36} = 6$

Titik fokus = $(0, \pm c) = (0, \pm 6)$

Titik puncak = $(0, \pm a) = (0, \pm 10)$

keeksentrikan = $e = \frac{c}{a} = \frac{6}{10} = \frac{3}{5}$



b. $25x^2 + 9y^2 = 225$

$\frac{25}{225}x^2 + \frac{9}{225}y^2 = 1$

$\frac{x^2}{9} + \frac{y^2}{25} = 1$

$a^2 = 25$, $a = 5$

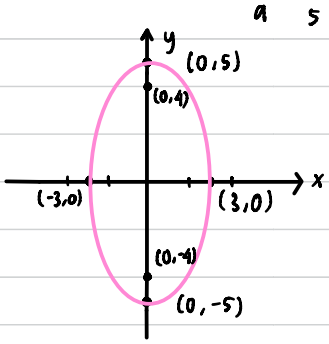
$b^2 = 9$, $b = 3$

$c = \sqrt{25 - 9} = \sqrt{16} = 4$

Titik fokus = $(0, \pm c) = (0, \pm 4)$

Titik puncak = $(0, \pm a) = (0, \pm 5)$

keeksentrikan = $e = \frac{c}{a} = \frac{4}{5}$



3. a) $\frac{x^2}{144} - \frac{y^2}{25} = 1$

$a^2 = 144$, $a = 12$

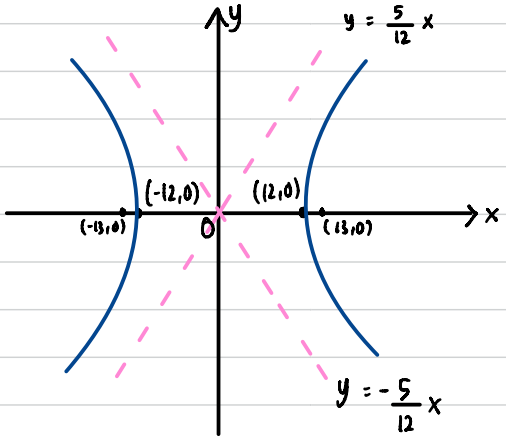
$b^2 = 25$, $b = 5$

$c = \sqrt{144+25} = \sqrt{169} = 13$

Titik fokus $= (\pm c, 0) = (\pm 13, 0)$

Titik puncak $= (\pm a, 0) = (\pm 12, 0)$

asimtot $y = \pm\left(\frac{b}{a}\right)x = \pm\left(\frac{5}{12}\right)x$



b) $9y^2 - x^2 = 9$

$\frac{y^2}{1} - \frac{x^2}{9} = 1$

$a^2 = 1$, $a = 1$

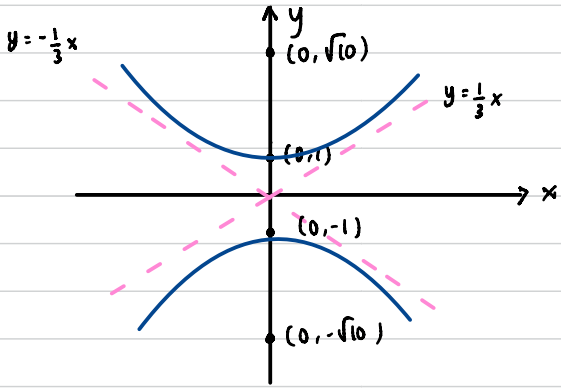
$b^2 = 9$, $b = 3$

$c^2 = \sqrt{1+9} = \sqrt{10} = 3,16$

Titik fokus $= (0, \pm c) = (0, \pm\sqrt{10})$

Titik puncak $= (0, \pm a) = (0, \pm 1)$

asimtot $y = \pm\left(\frac{a}{b}\right)x = \pm\left(\frac{1}{3}\right)x$



4. a) Parabola

titik puncak : (0,0)

titik fokus : (0,-2) → (0,p)

$p = -2 < 0$ (tipe b)

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

$\therefore x^2 = -8y$

b) Parabola

titik fokus : (1,0) → (p,0)

direktriks $x = -1$

$p = 1 > 0$ (tipe c)

$y^2 = 4px = 4x$

$\therefore y^2 = 4x$

5. a) Elips

titik fokus : $(\pm 2, 0) \rightarrow (\pm c, 0)$

titik puncak : $(\pm 5, 0) \rightarrow (\pm a, 0)$

$c = 2$, $a = 5$

$c^2 = a^2 - b^2$

$4 = 25 - b^2$

$b^2 = 21$, $b = \sqrt{21}$

$\frac{x^2}{25} + \frac{y^2}{21} = 1$

6. a) Hiperbola

titik fokus : $(0, \pm 3) \rightarrow (0, \pm c)$

titik puncak : $(0, \pm 1) \rightarrow (0, \pm a)$

$c = 3$, $a = 1$

$c^2 = a^2 + b^2$

$9 = 1 + b^2$, $b^2 = 8$

$\frac{y^2}{a^2} - \frac{x^2}{b^2} = 1 \Rightarrow \frac{y^2}{1} - \frac{x^2}{8} = 1$

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

b) Hiperbola

titik puncak $(\pm 3, 0) \rightarrow (\pm a, 0)$

garis asimtot $y = \pm 2x \rightarrow y = \pm\left(b/a\right)x$

$a = 3$, $b = 6$

$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

$\frac{x^2}{9} - \frac{y^2}{36} = 1$