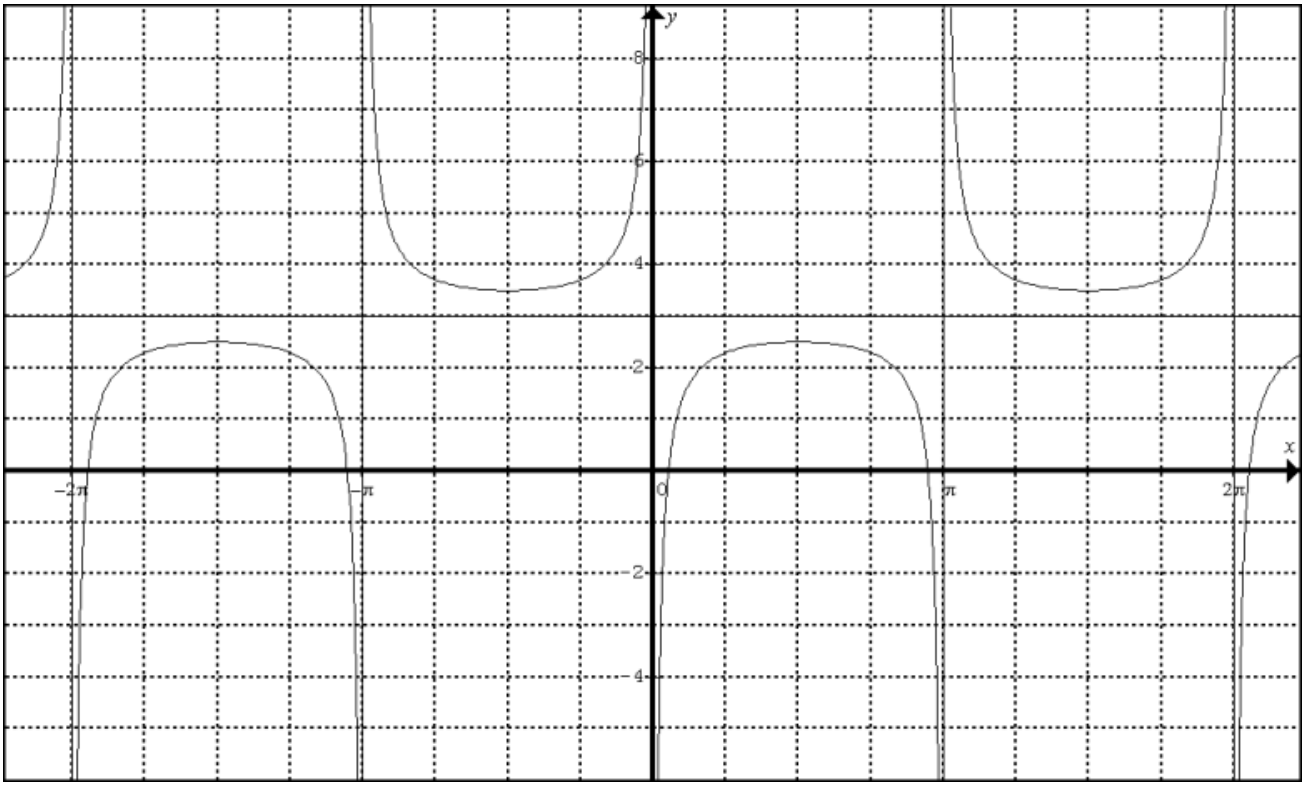
1 a



Period: 2π

Domain: $\{x \in R, x \neq \pi k, k \in I\}$

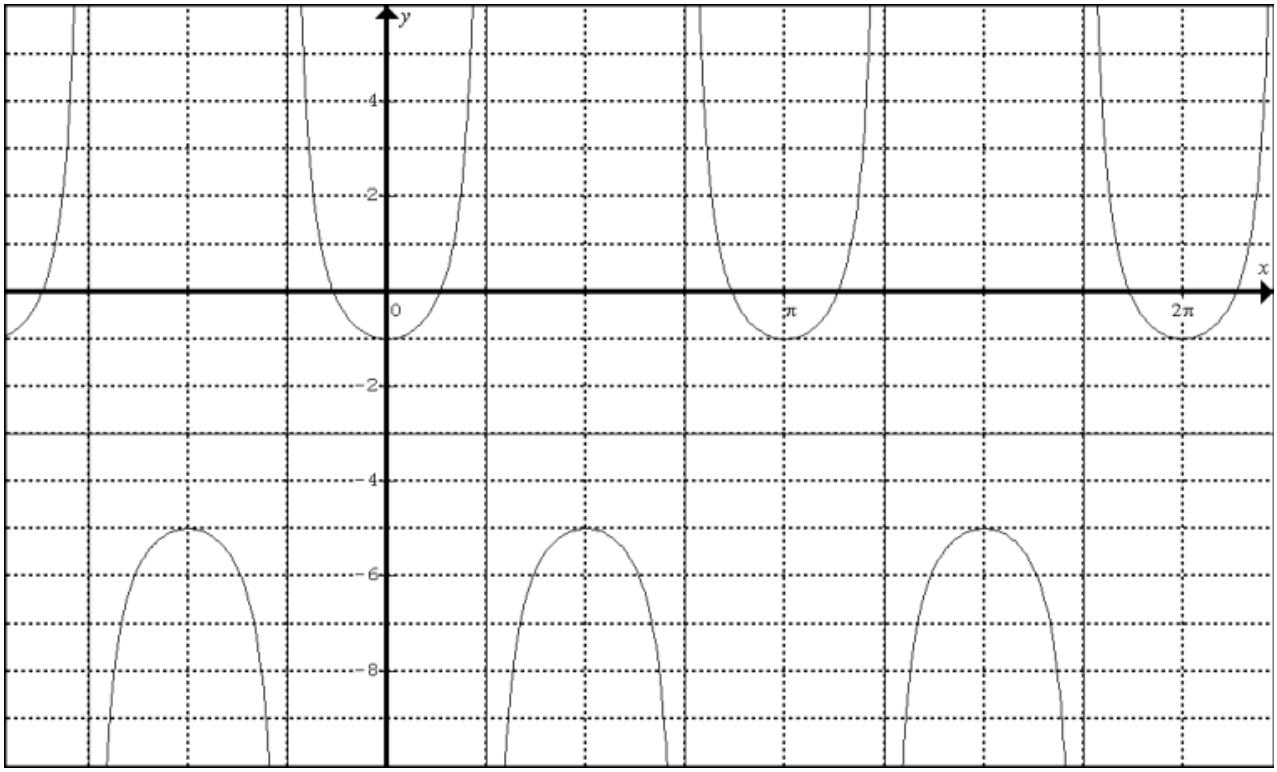
Range: $\{y \geq 3.5 \text{ or } y \leq 2.5, y \in R\}$

Asymptotes at $x = \pi k, k \in I$

Local minimum values at $x = -\pi/2 + 2\pi k, k \in I$

Local maximum values at $x = \pi/2 + 2\pi k, k \in I$

1 b



Period: π

Domain: $\{x \in R, x \neq \pi/4 + \pi k/2, k \in I\}$

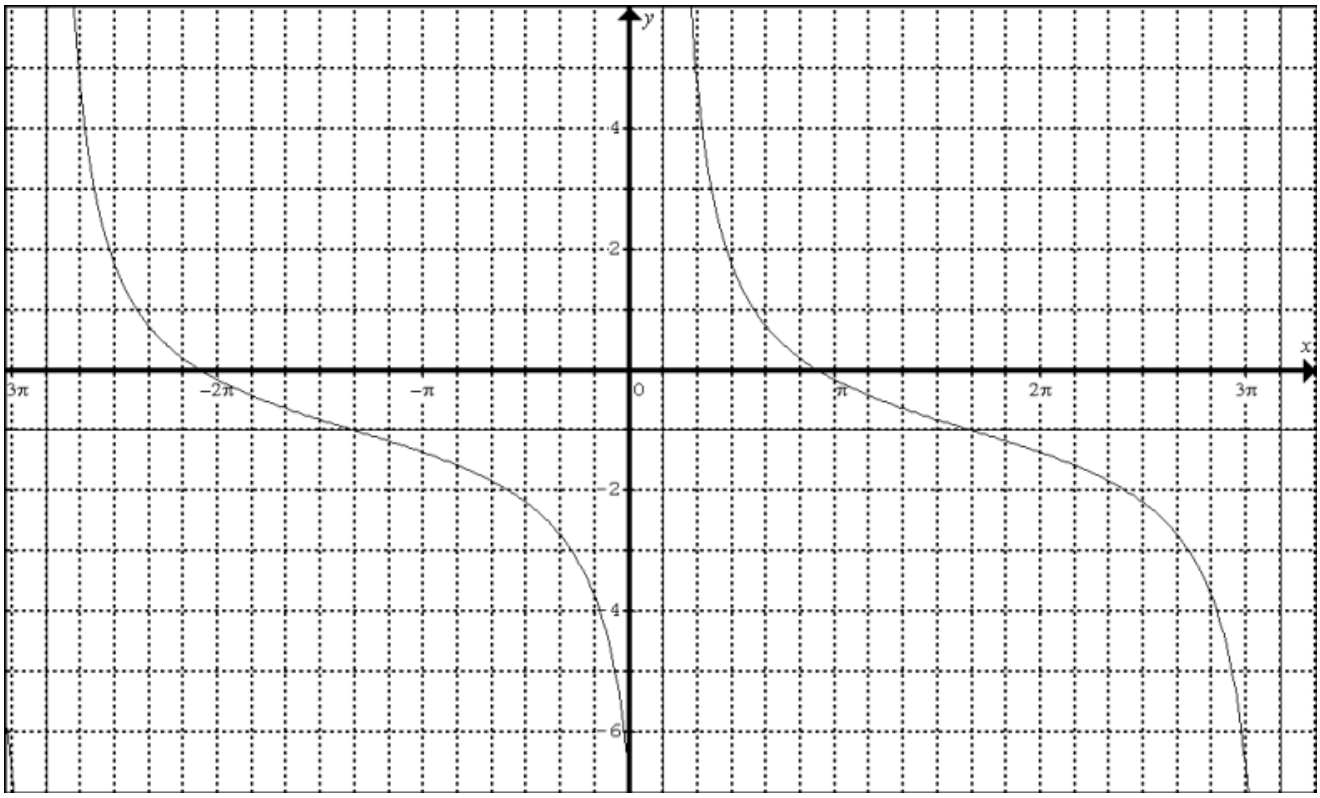
Range: $\{y \geq -1 \text{ or } y \leq -5, y \in R\}$

Asymptotes at $x = \pi/4 + \pi k/2, k \in I$

Local minimum values at $x = \pi k, k \in I$

Local maximum values at $x = \pi/2 + \pi k, k \in I$

1 c



Period: 3π

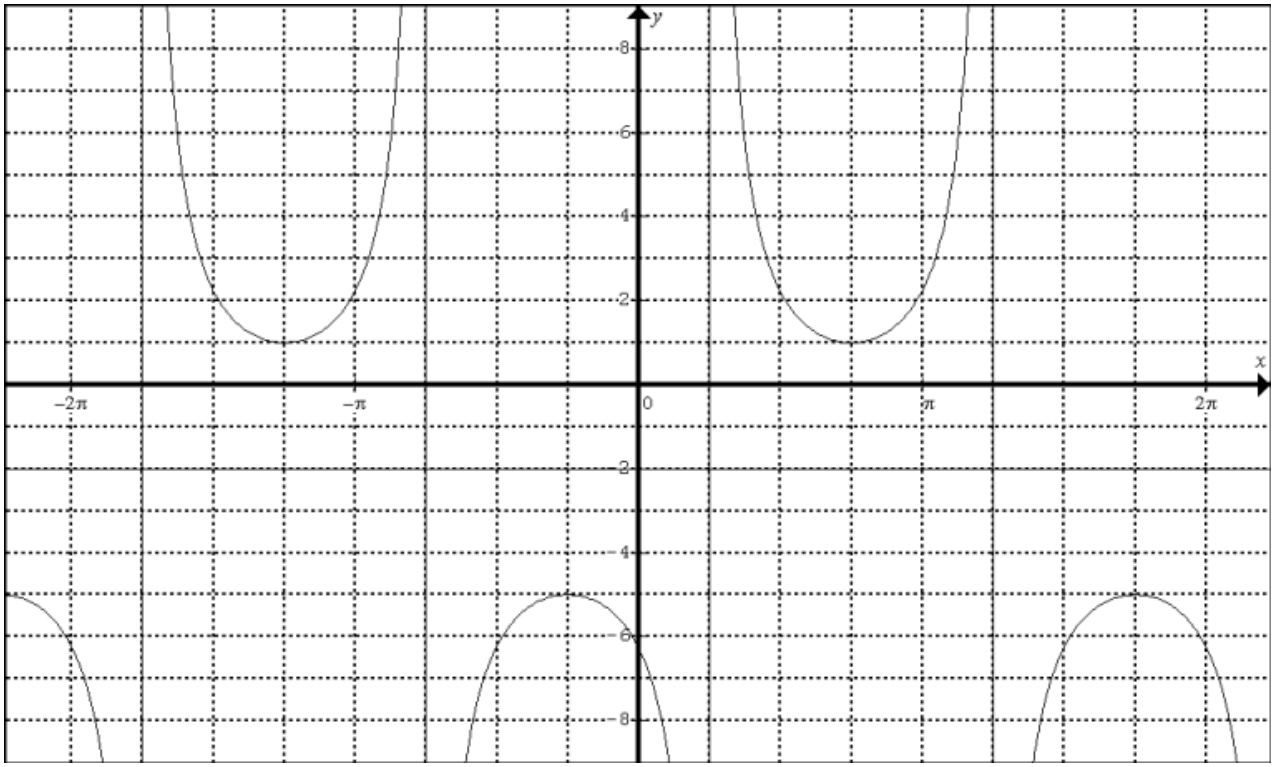
Domain: $\{x \in R, x \neq \pi/6 + 3\pi k, k \in I\}$

Range: $\{y \in R\}$

Asymptotes at $x = \pi/6 + 3\pi k, k \in I$

No minimum or maximum values

1 d



Period: 2π

Domain: $\{x \in R, x \neq \pi/4 + \pi k, k \in I\}$

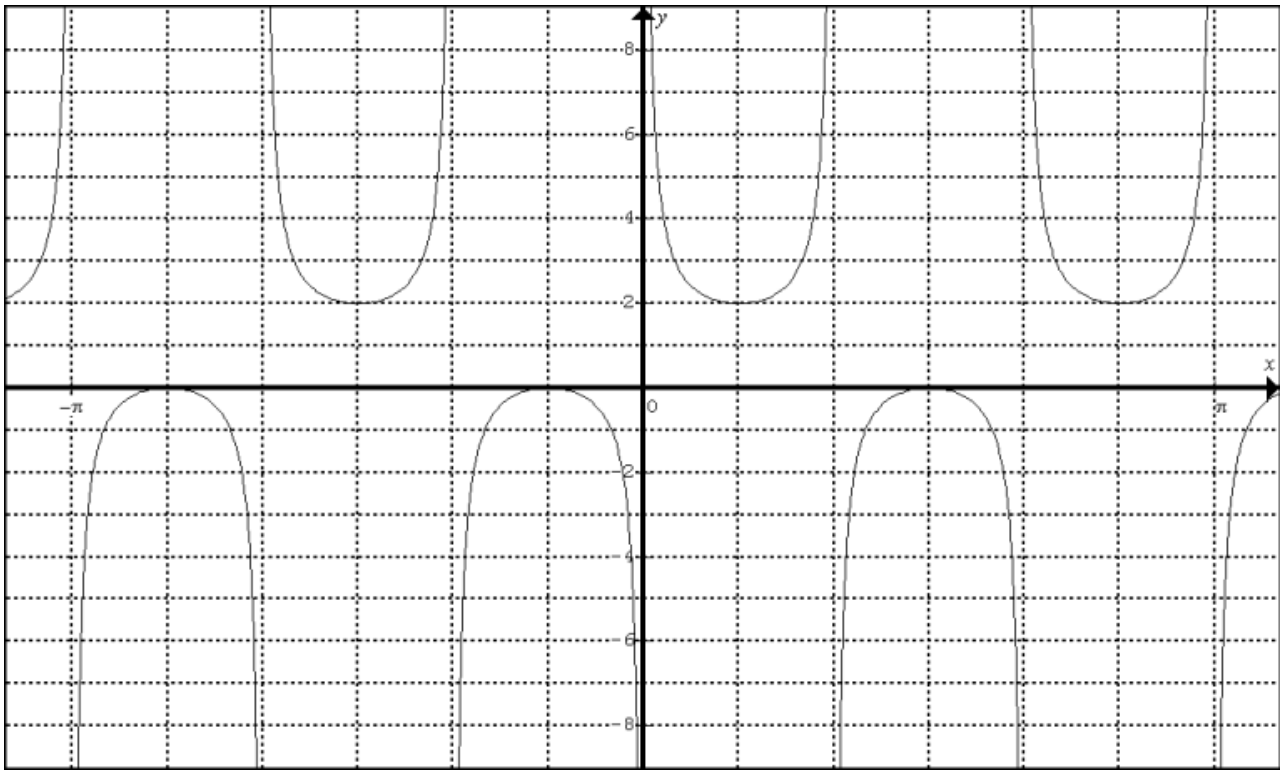
Range: $\{y \geq 1 \text{ or } y \leq -5, y \in R\}$

Asymptotes at $x = \pi/4 + \pi k, k \in I$

Local minimum values at $x = 3\pi/4 + 2\pi k, k \in I$

Local maximum values at $x = -\pi/4 + 2\pi k, k \in I$

1 e



Period: $2\pi/3$

Domain: $\{x \in R, x \neq \pi k/3, k \in I\}$

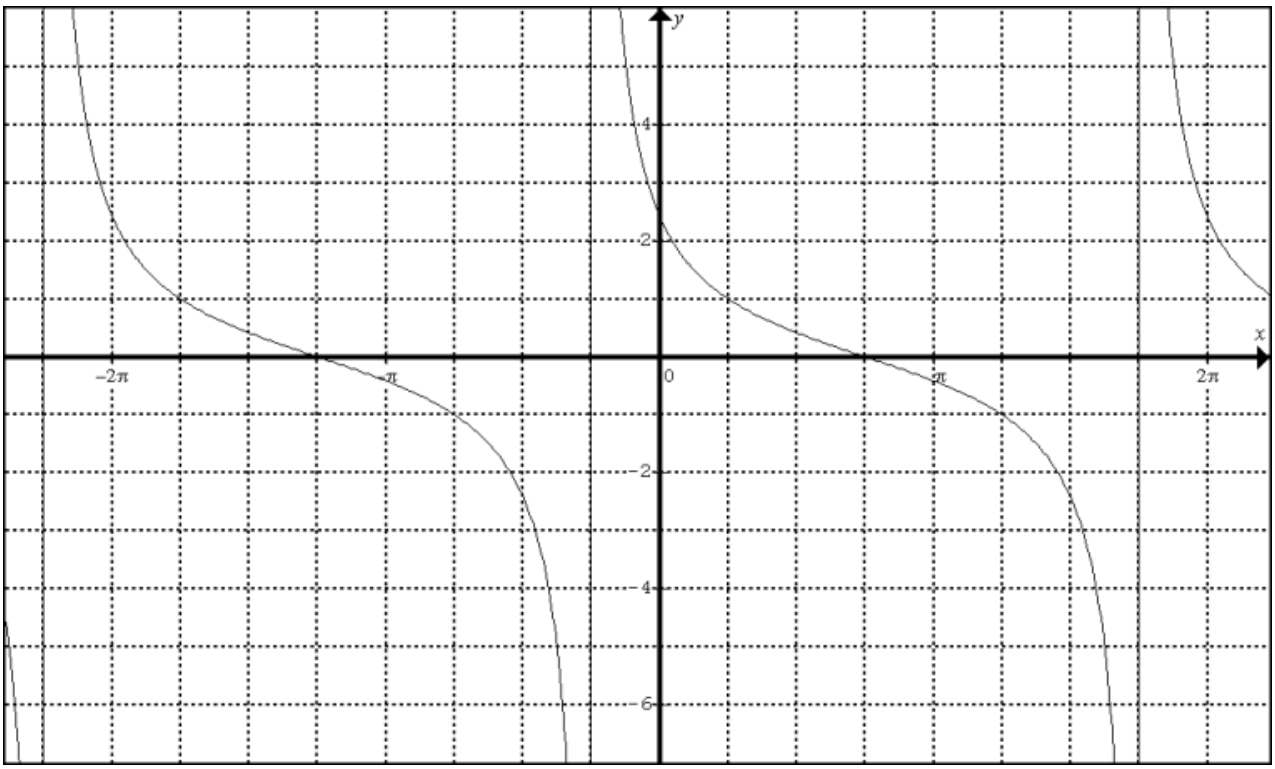
Range: $\{y \geq 2 \text{ or } y \leq 0, y \in R\}$

Asymptotes at $x = \pi k/3, k \in I$

Local minimum values at $x = \pi/6 + 2\pi k/3, k \in I$

Local maximum values at $x = -\pi/6 + 2\pi k/3, k \in I$

1 f



Period: 2π

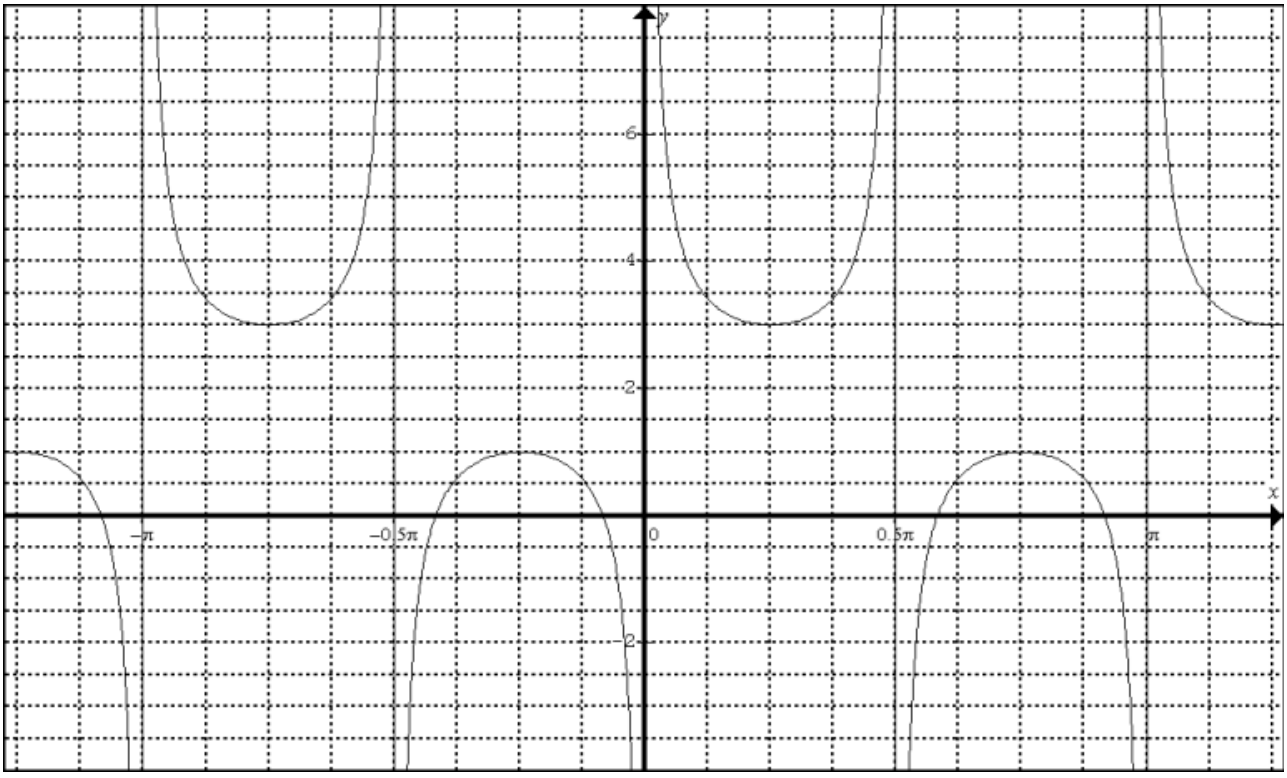
Domain: $\{x \in R, x \neq -\pi/4 + 2\pi k, k \in I\}$

Range: $\{y \in R\}$

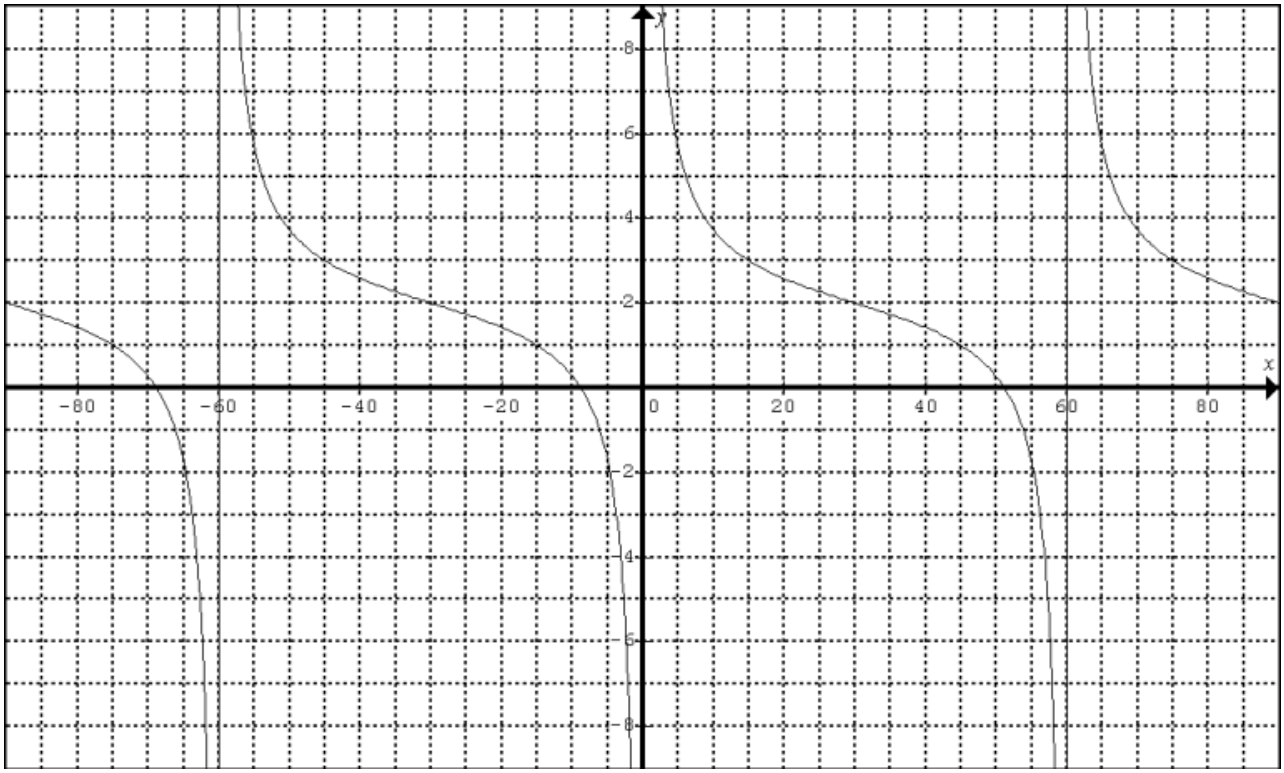
Asymptotes at $x = -\pi/4 + 2\pi k, k \in I$

No minimum or maximum values

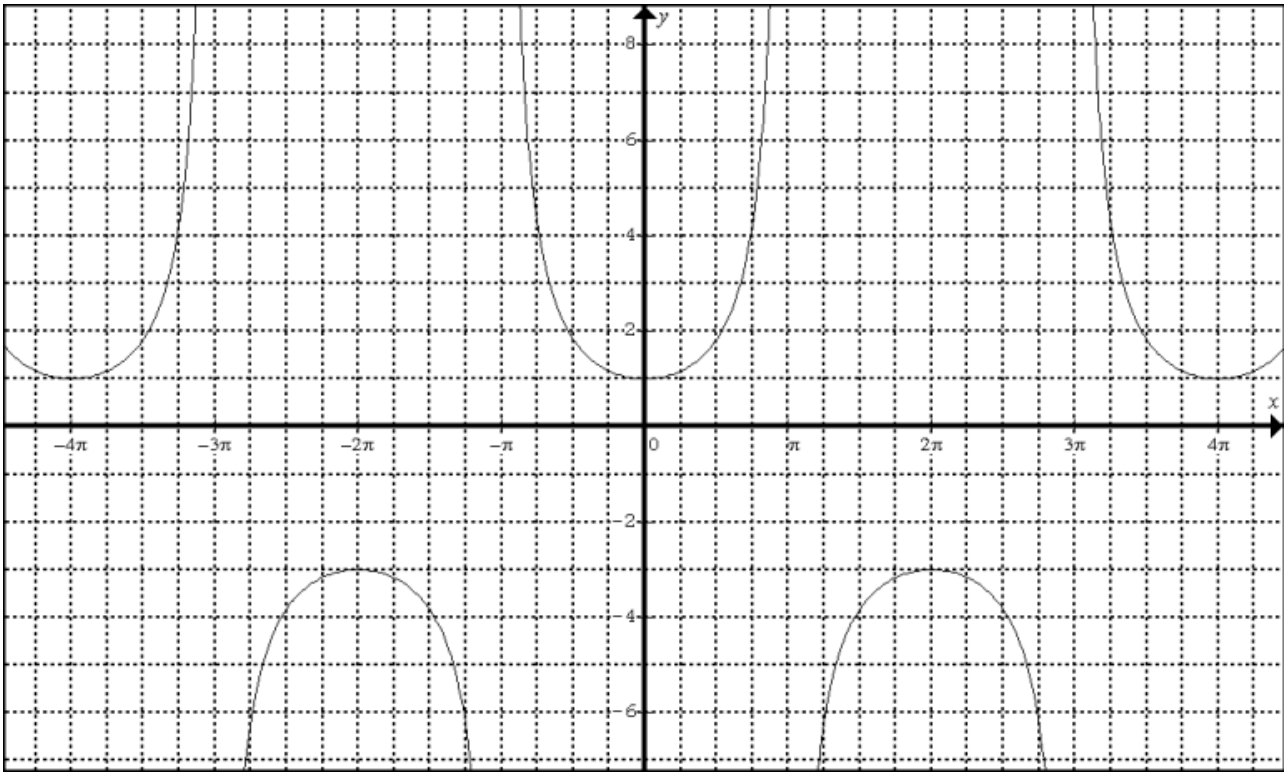
2 a $(y - 2) = \csc 2x$ OR $(y - 2) = \sec 2(x - \pi/4)$



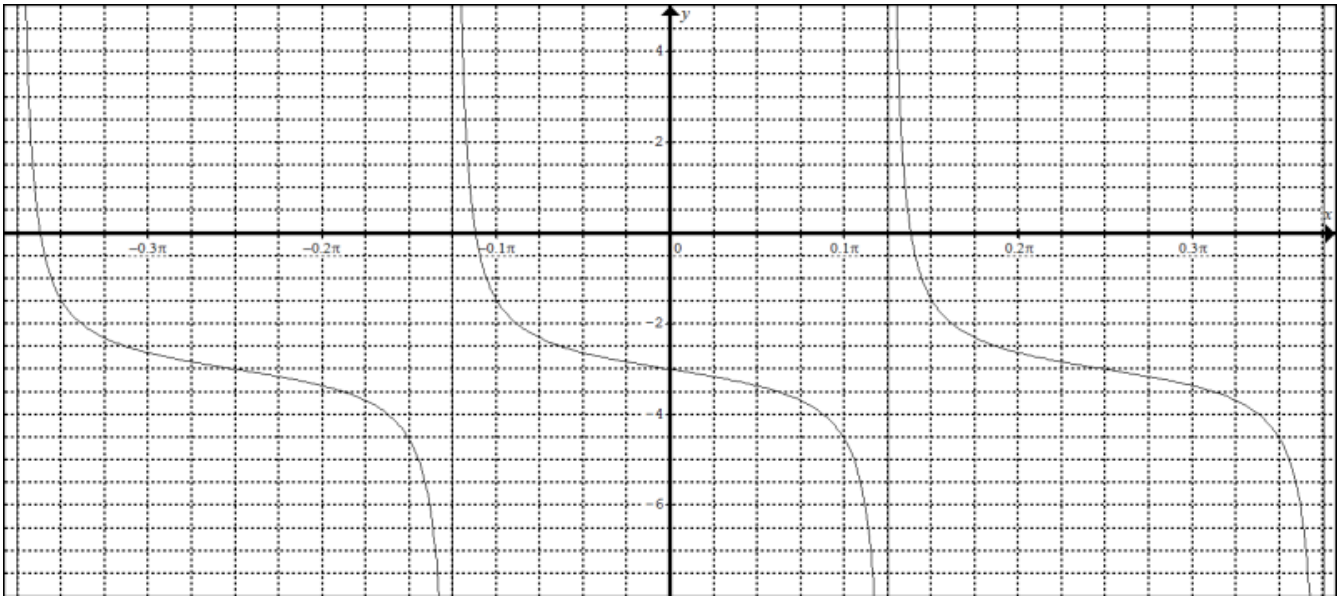
2 b $y - 2 = \cot 3x$ OR $-(y - 2) = \tan 3(x + 30^{o})$



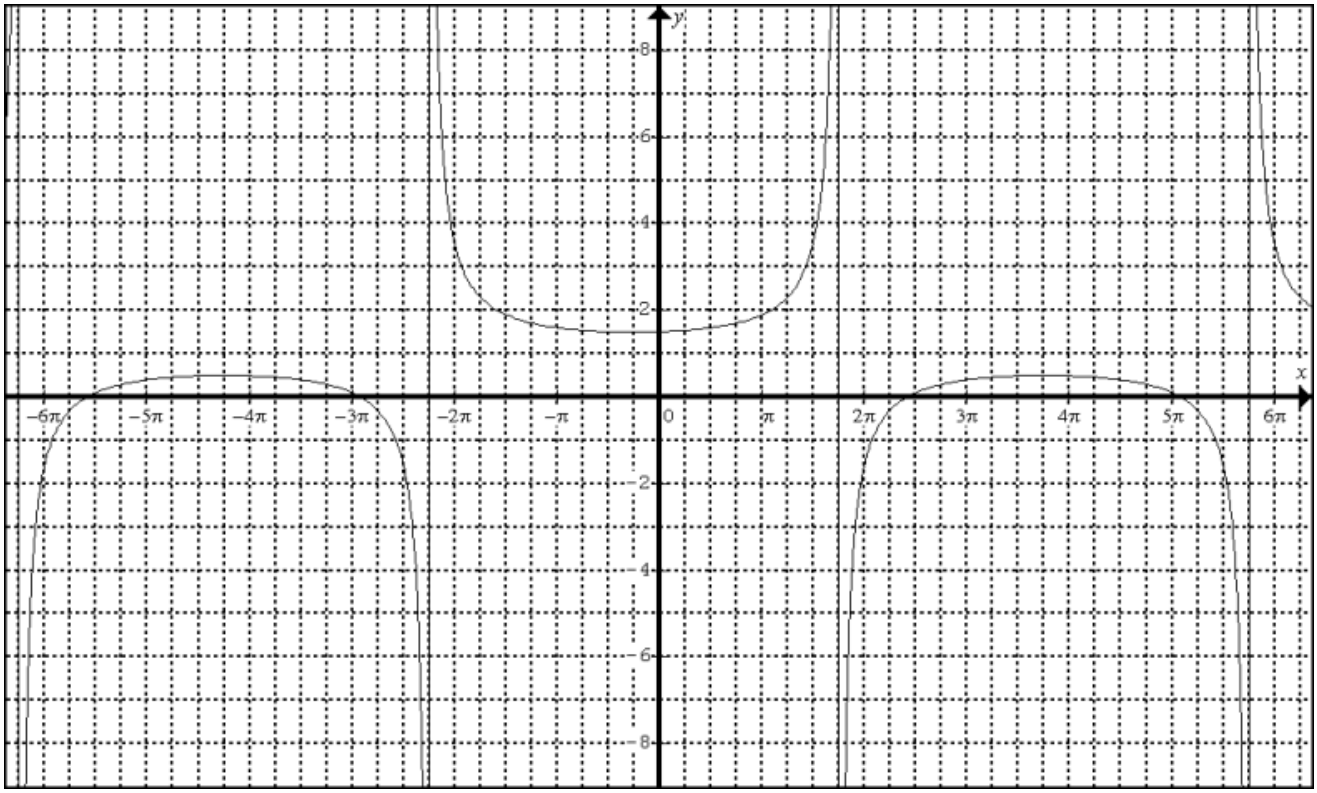
2 c ½(y + 1) = sec ½x OR ½(y + 1) = csc ½(x + π)



2 d. $2(y + 3) = \cot 4(x - \pi/8)$ OR $-2(y + 3) = \tan 4x$



2 e $2(y - 1) = \sec \frac{1}{4}(x + \pi/4)$ OR $2(y - 1) = \csc \frac{1}{4}(x + 9\pi/4)$



extra question:

$2(y + 1) = \tan (1/3)(x + \pi/2)$ OR $-2(y + 1) = \cot (1/3)(x - \pi)$