

Name: key  
Serafino · Geometry

No. \_\_\_\_\_ Per: \_\_\_\_\_

Date: \_\_\_\_\_  
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3A2

### Graphing Tangent & Cotangent (ABD)

Classwork / Homework: Graphing tangent and cotangent functions with transformations

#### Tangent Parent Function

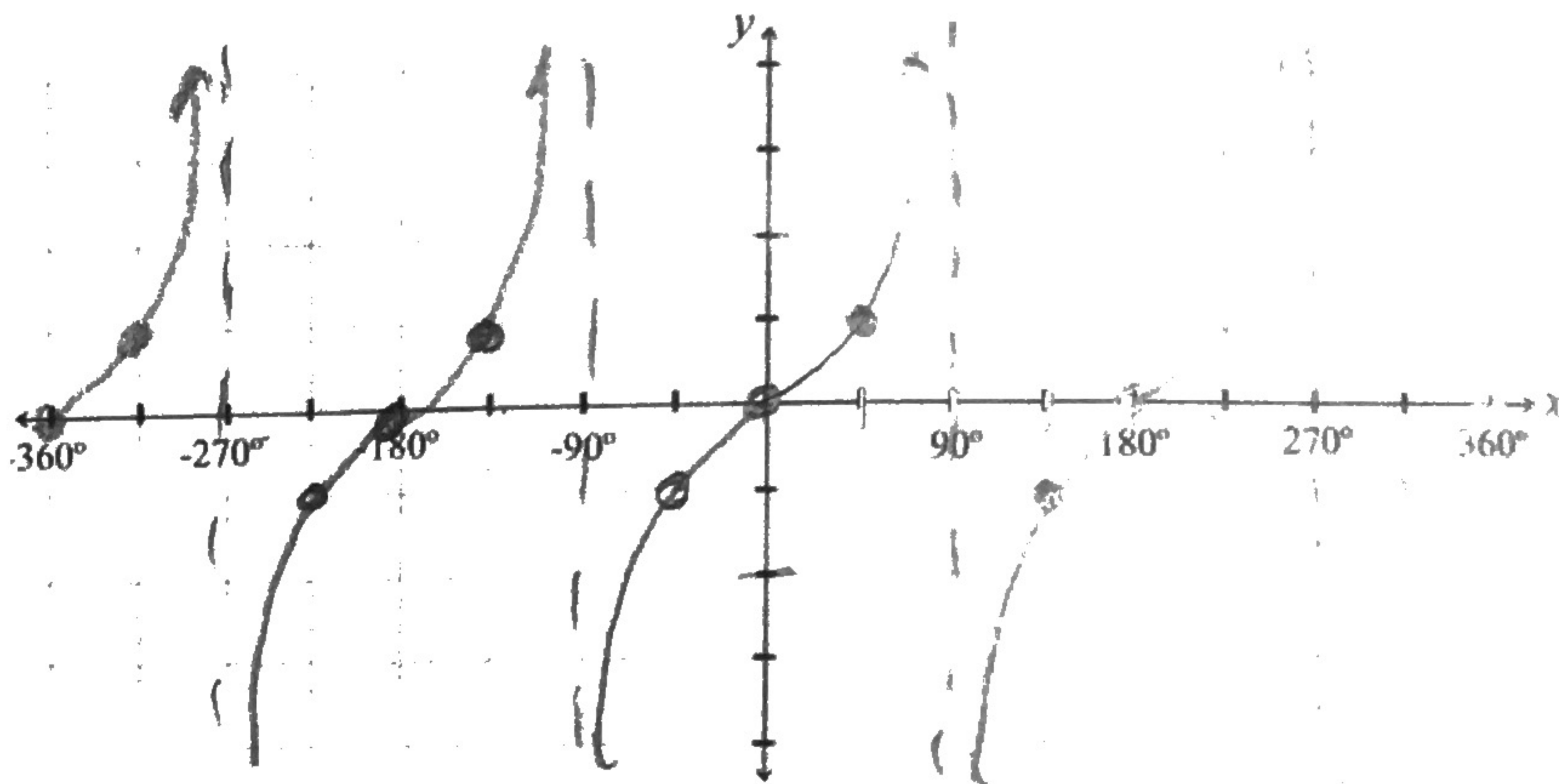
$f(x) = \tan(x)$

Domain:  $x \neq 90^\circ + 180^\circ k$

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

Natural Period:  $180^\circ$

x-intercepts:  $180^\circ k$



#### Cotangent Parent Function

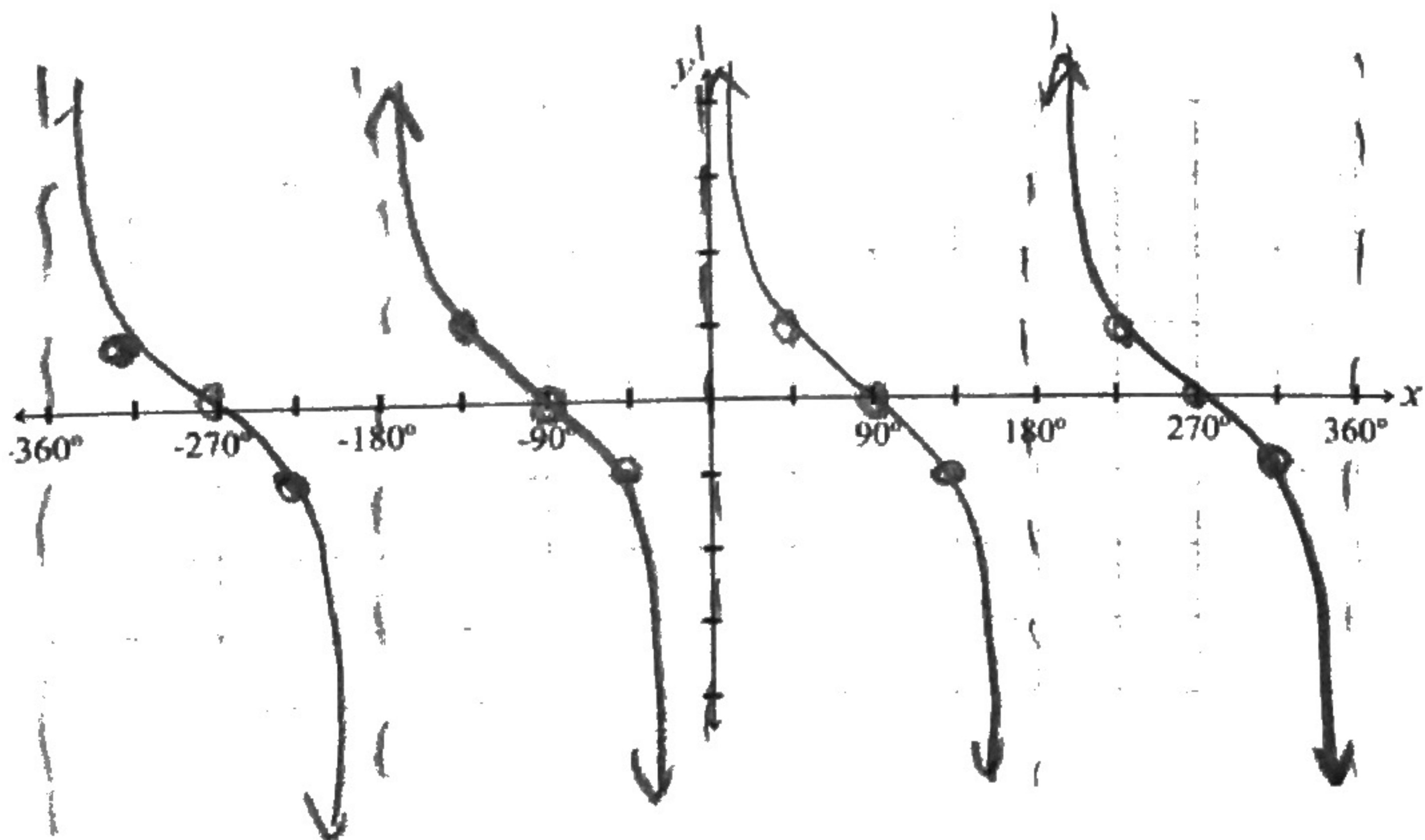
$f(x) = \cot(x)$

Domain:  $x \neq 180^\circ k$

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

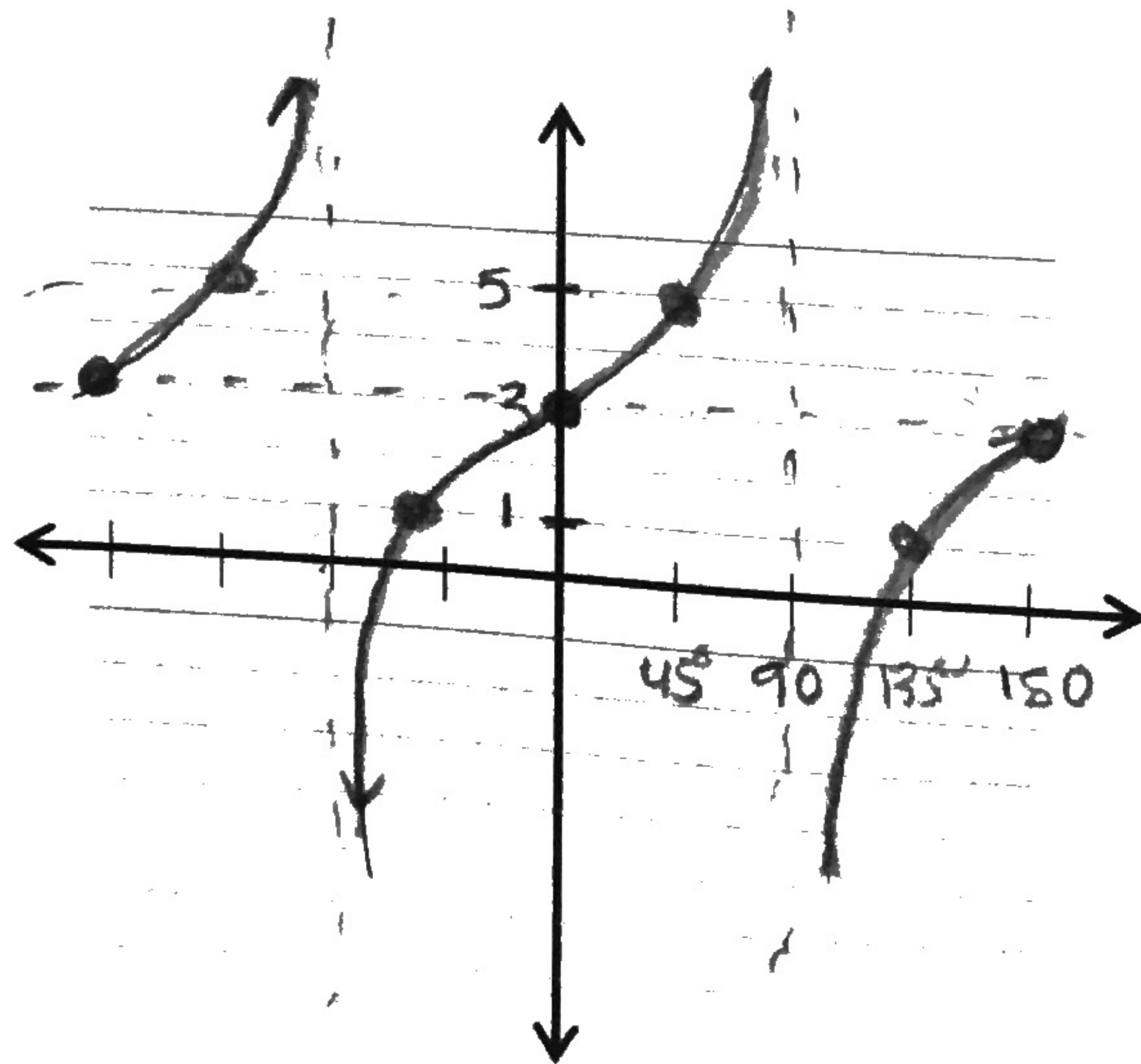
Natural Period:  $180^\circ$

x-intercepts:  $90^\circ + 180^\circ k$



1.  $y = 2\tan(x) + 3$

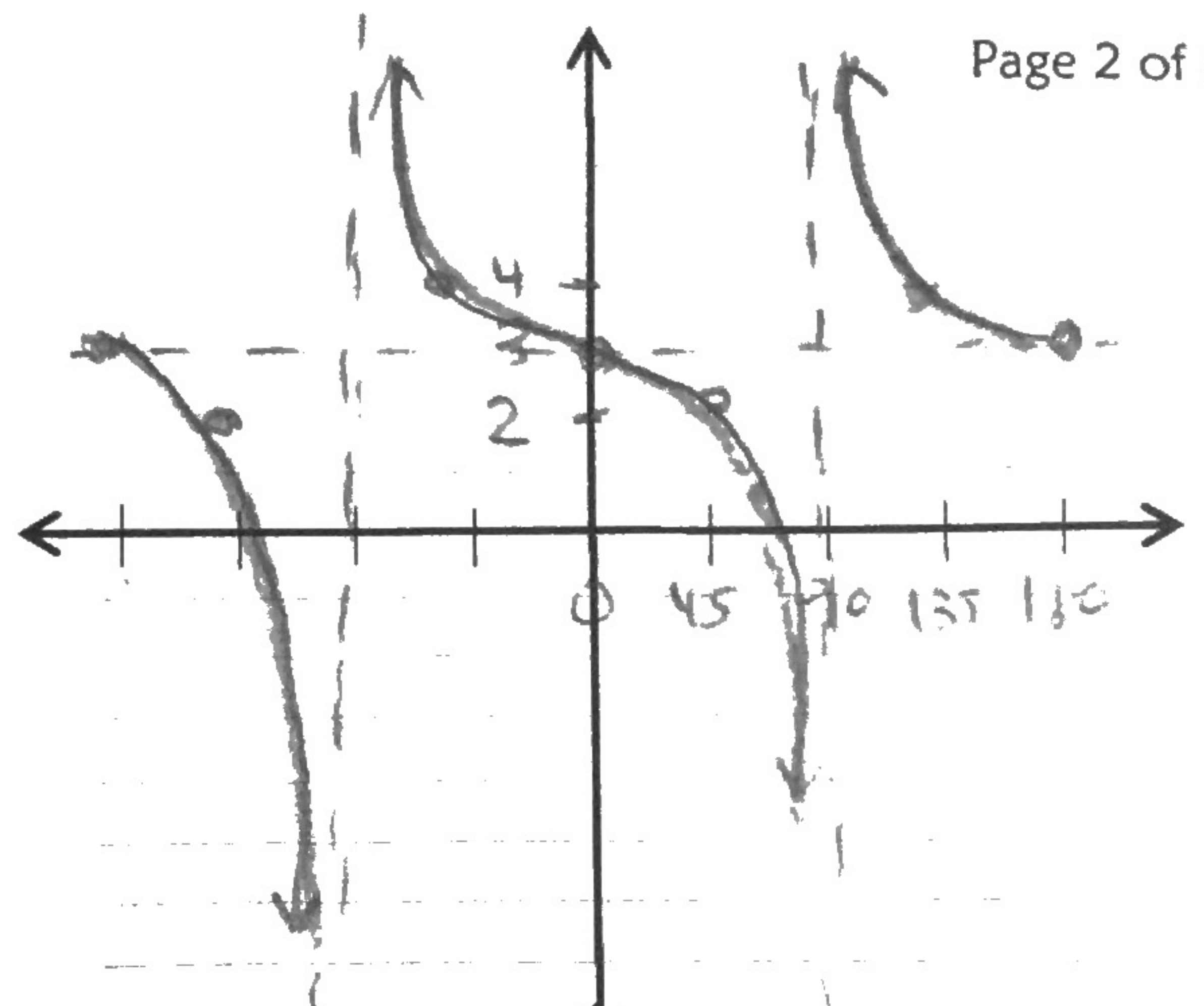
SA:	$y = 3$	Freq.	1
D	$x \neq 90 + 180k$	R	$y \in \mathbb{R}$
Per	$180^\circ$	Inc	45





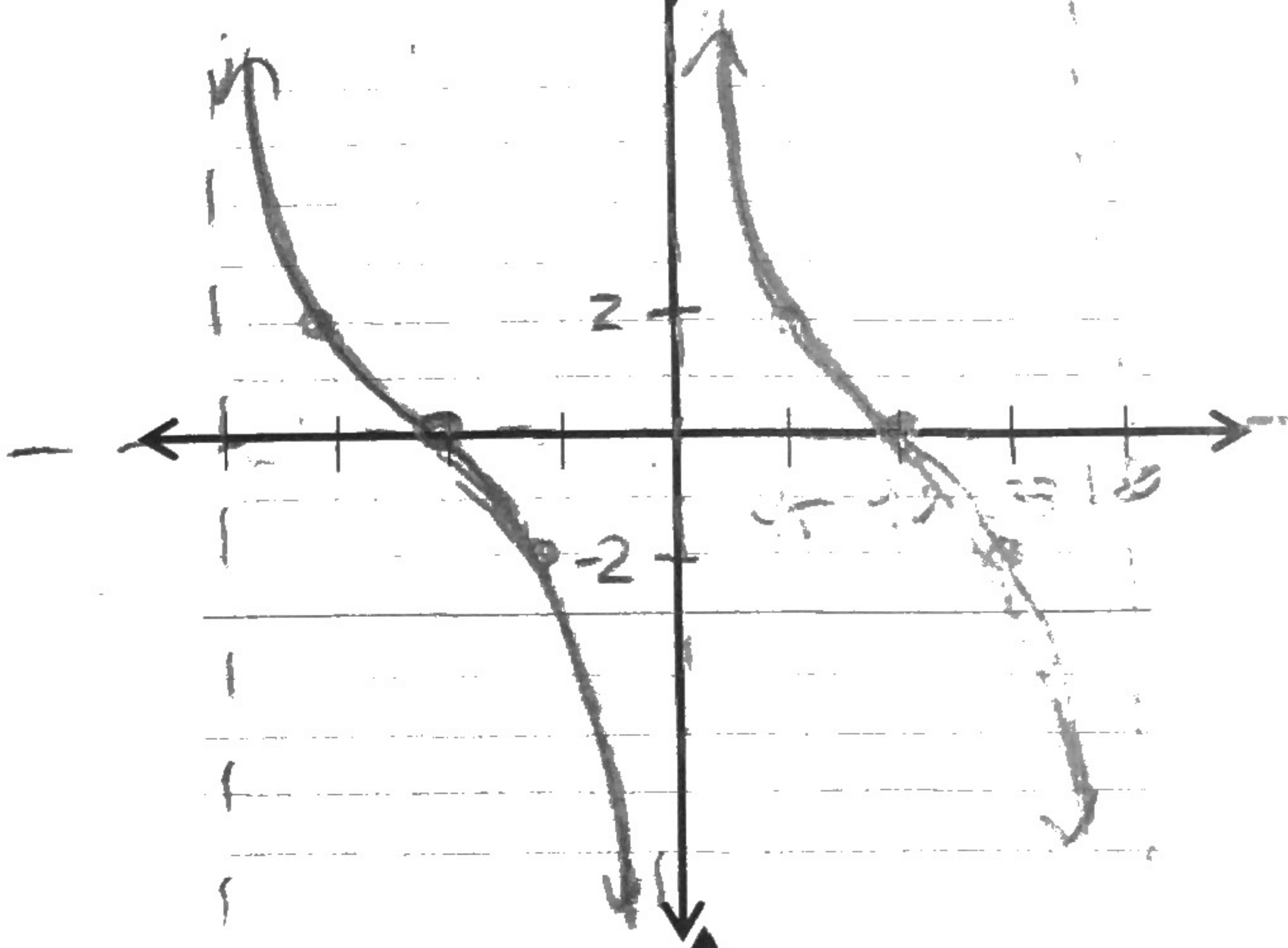
2.  $y = -\tan(x) + 3$

SA:	$y = 3$	Freq.	1
D	$x \neq 90^\circ + 180^\circ k$	R	$y \in \mathbb{R}$
Per	180	Inc	$45^\circ$



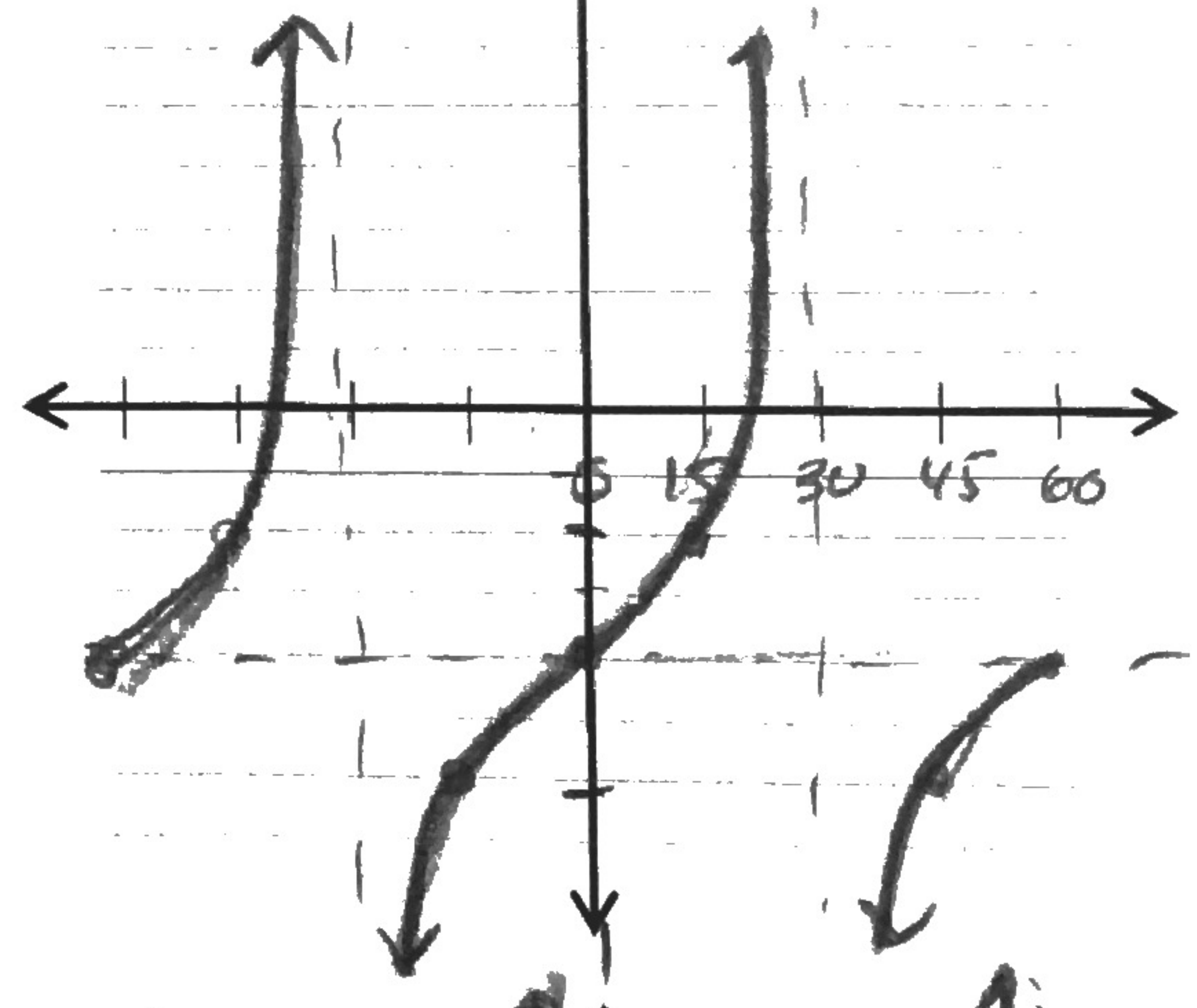
3.  $y = 2 \cot(x)$

SA:	$y = 0$	Freq.	1
D	$x \neq 180^\circ k$	R	$y \in \mathbb{R}$
Per	180	Inc	$45^\circ$



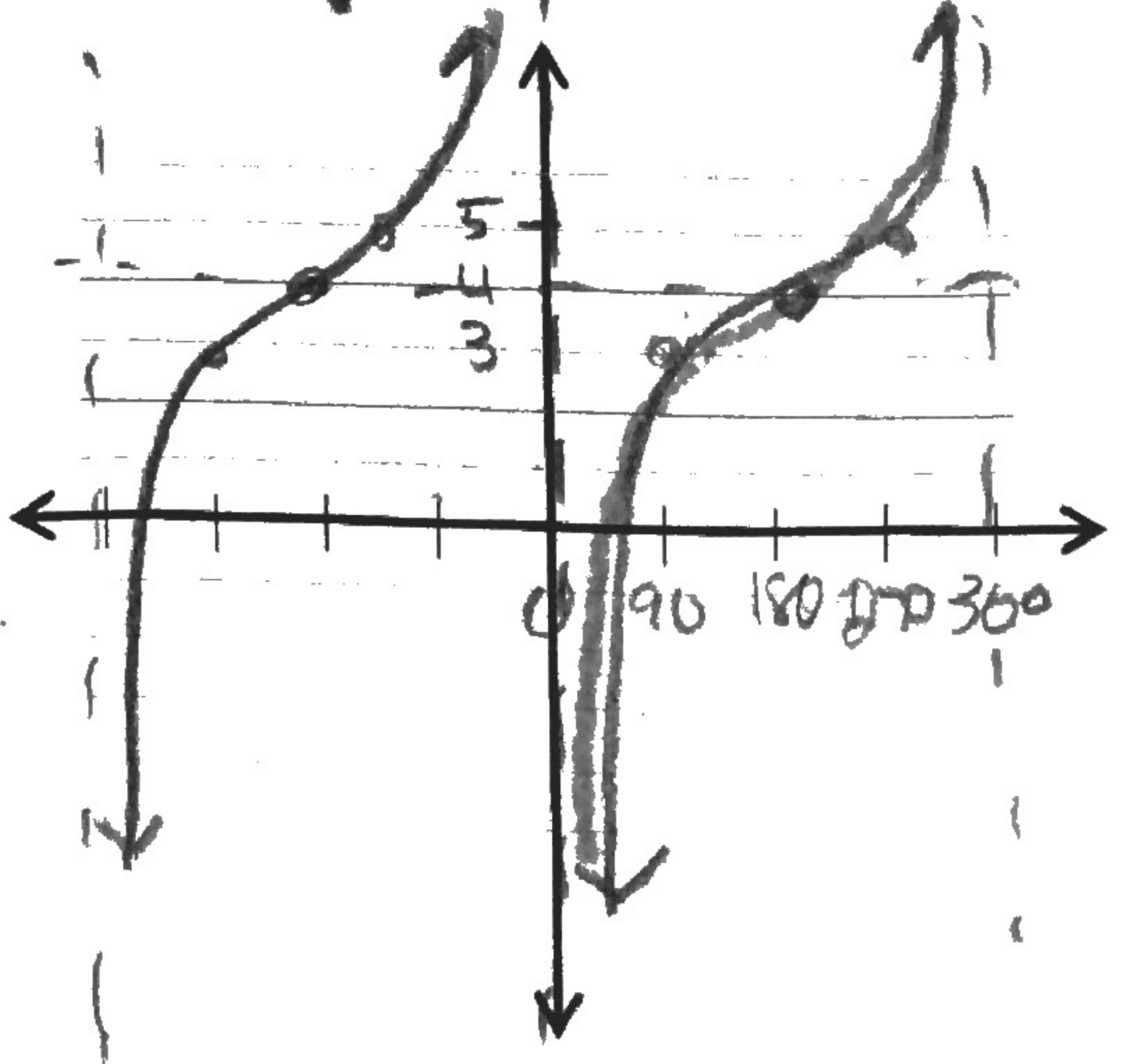
4.  $y = 2 \tan(3x) - 4$

SA:	$y = -4$	Freq.	3
D	$x \neq 30^\circ + 60^\circ k$	R	$y \in \mathbb{R}$
Per	$\frac{180}{3} = 60^\circ$	Inc	$\frac{60}{4} = 15^\circ$



5.  $y = -\cot(\frac{1}{2}x) + 4$

SA:	$y = 4$	Freq.	$\frac{1}{2}$
D	$x \neq 360^\circ k$	R	$y \in \mathbb{R}$
Per:	$\frac{180}{\frac{1}{2}} = 360^\circ$	Inc	$90^\circ$

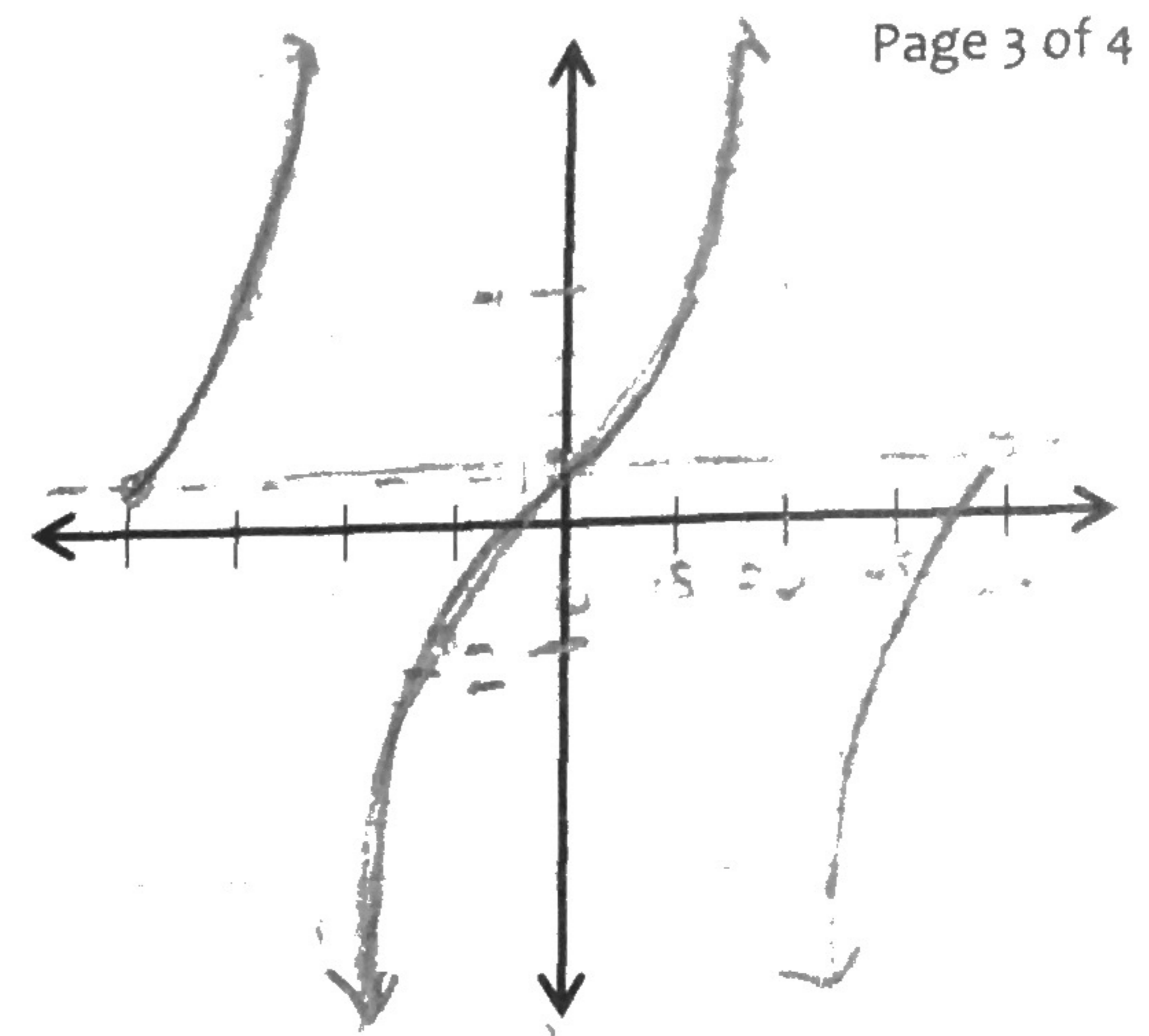


$\frac{180 \cdot 2}{x}$



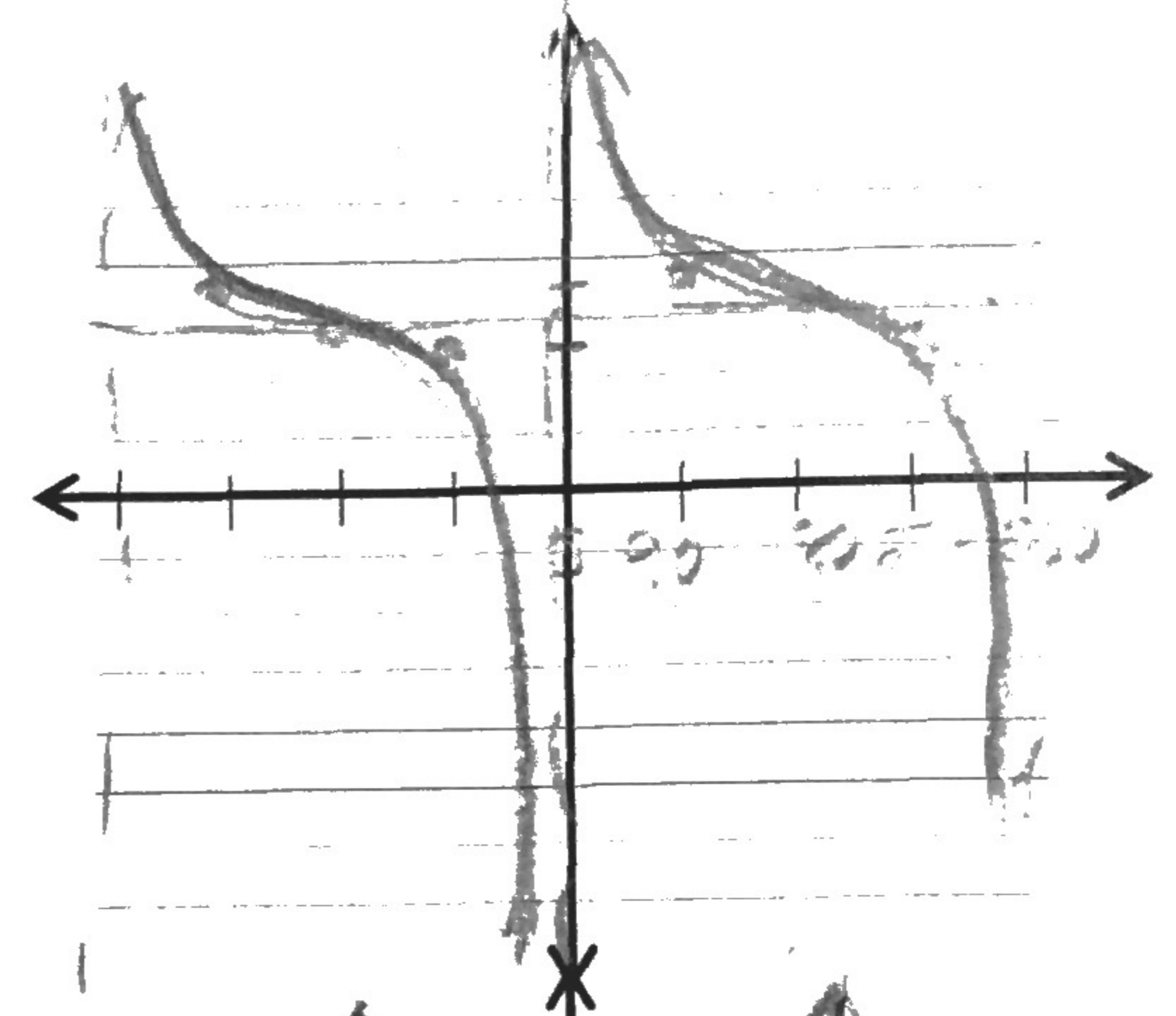
6.  $y = 3 \tan(3x) + 1$

SA:	$y = 1$	Freq.	3
D	$x \neq 30^\circ + 60^\circ k$	R	$y \in \mathbb{R}$
Per	$60^\circ$	Inc	$15^\circ$



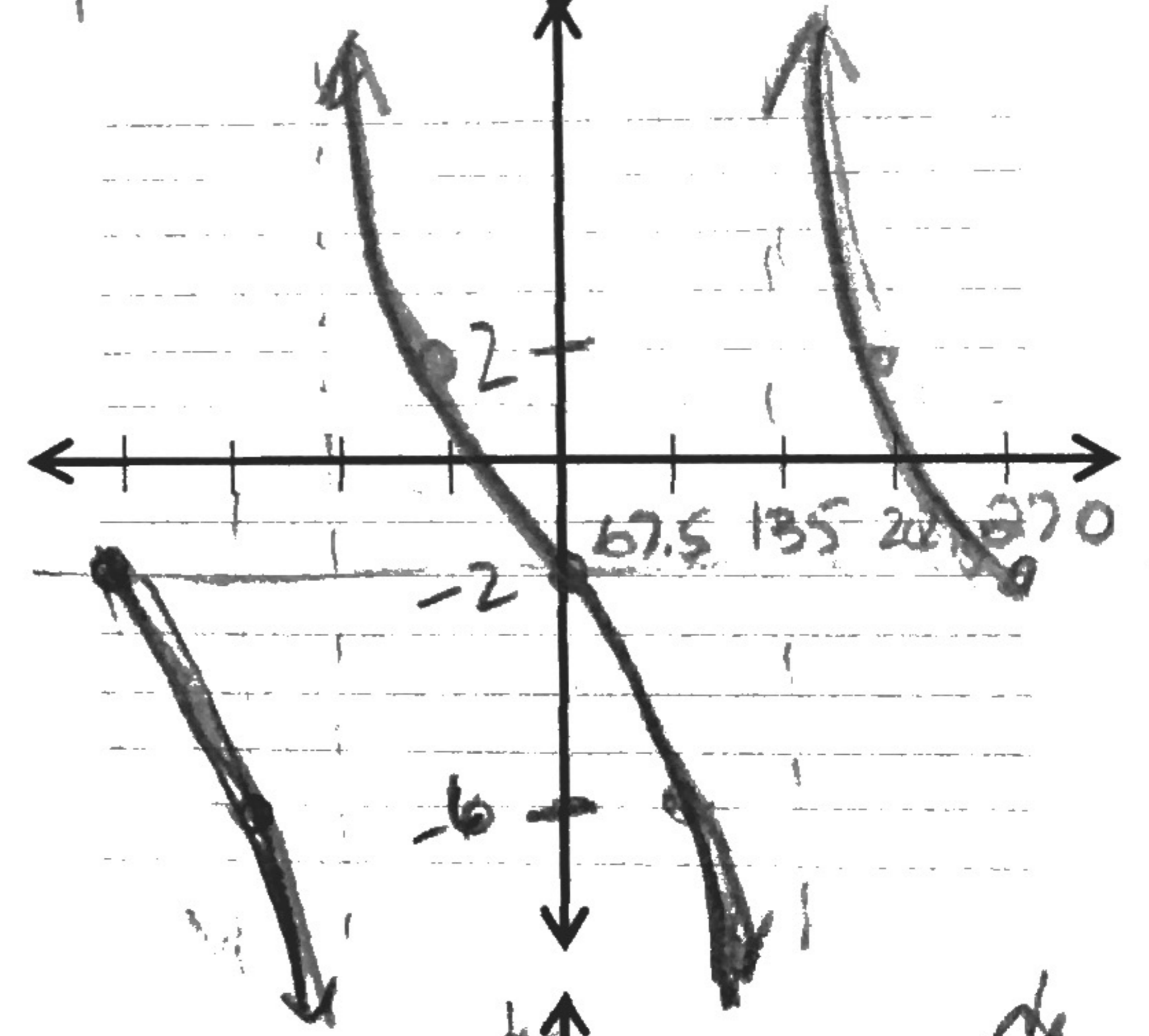
7.  $y = \frac{1}{2} \cot\left(\frac{x}{2}\right) + 3$

SA:	$y = 3$	Freq.	$\frac{1}{2}$
D		R	$y \in \mathbb{R}$
Per	$360^\circ$	Inc	90



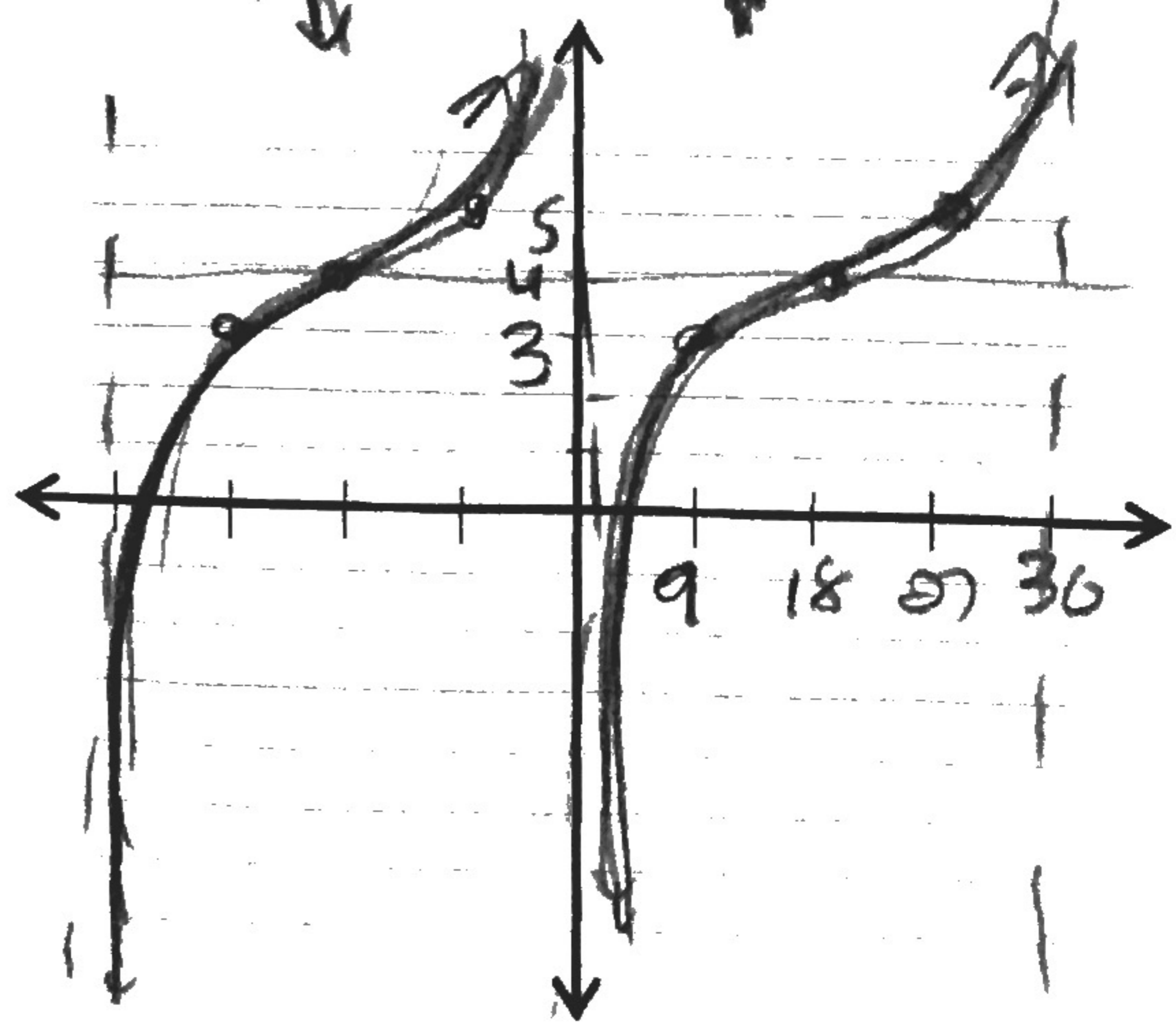
8.  $y = -4 \tan\left(\frac{2}{3}x\right) - 2$

SA:	$y = -2$	Freq.	$\frac{2}{3}$
D	$x \neq 135^\circ + 270^\circ k$	R	$y \in \mathbb{R}$
Per	270	Inc	67.5



9.  $y = -\cot(5x) + 4$

SA:	$y = 4$	Freq.	5
D	$x \neq 36^\circ k$	R	$y \in \mathbb{R}$
Per	36	Inc	9





10.  $y = 2 + \cot\left(\frac{9}{2}x\right)$

SA:	$y = 2$	Freq.	$9/2$
D	$x \neq 40^\circ k$	R	$y \in \mathbb{R}$
Per	40	Inc	10

11.  $y = -\frac{5}{2} \cot(20x)$

SA:	$y = 0$	Freq.	20
D	$x \neq 90^\circ k$	R	$y \in \mathbb{R}$
Per	$9^\circ$	Inc	$\frac{9}{4}$ or 2.25

12.  $y = \cot(10x) + 4$

SA:	$y = 4$	Freq.	10
D	$x \neq$	R	1
Per	$18^\circ$	Inc	4.5

13.  $y = 4 \tan(15x) - 2$

SA:	$y = -2$	Freq.	15
D	$x =$	R	$y \in \mathbb{R}$
Per	$12^\circ$	Inc	$3^\circ$

