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5. $$\sqrt{\frac{1-\sin A}{1+\sin A}} = \sqrt{\frac{(1-\sin A)^2}{\cos^2 A}} = \frac{1-\sin A}{\cos A}$$

14. $$\frac{\frac{\sin A}{\cos A}}{1-\frac{\cos A}{\sin A}} + \frac{\frac{\cos A}{\sin A}}{1-\frac{\sin A}{\cos A}} = \frac{\sin^2 A}{\cos A(\sin A-\cos A)} - \frac{\cos^2 A}{\sin A(\sin A-\cos A)}$$

$$\sqrt{x^2} = |x|$$

10. $$\frac{\sec^2 A-\tan^2 A}{\sec A-\tan A} = \sec A+\tan A$$

$$\frac{1+\sin A\cos A}{\sin A\cos A} = \frac{\sin^3 A-\cos^3 A}{\sin A\cos A(\sin A-\cos A)}$$

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23. $(\underline{\operatorname{cosec}} A+\cot A)-\operatorname{cosec} A$

$= \operatorname{cosec} A-(\operatorname{cosec} A-\cot A)$

$= \dfrac{1}{\sin A} - \dfrac{1}{\operatorname{cosec} A+\cot A}$

24. $\dfrac{\cot A \cos A(\cot A-\cos A)}{\cot^2 A \cos^2 A}$

25. $\dfrac{\cot A+\tan B}{\dfrac{1}{\tan B}+\dfrac{1}{\cot A}}$

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26. $$\left(\frac{\cos^2\alpha}{\sin^2\alpha(1+\cos^2\alpha)}+\frac{\sin^2\alpha}{\cos^2\alpha(1+\sin^2\alpha)}\right)\cos^2\alpha\sin^2\alpha$$

$$\frac{\cos^4\alpha(1+\sin^2\alpha)+\sin^4\alpha(1+\cos^2\alpha)}{\cancel{\sin^2\alpha}\cancel{\cos^2\alpha}(1+\cos^2\alpha)(1+\sin^2\alpha)}\cancel{\cos^2\alpha}\cancel{\sin^2\alpha}$$

$-1+1$

$$\frac{\cos^4\alpha+\sin^4\alpha+2\sin^2\alpha\cos^2\alpha-\sin^2\alpha\cos^2\alpha}{2+\sin^2\alpha\cos^2\alpha}$$

$2\tan\alpha\cot\beta = \frac{1}{\cos\beta}+\frac{1}{\sin\alpha}$

29. $2\tan\alpha\operatorname{cosec}\beta + 2\cot\beta\sec\alpha$

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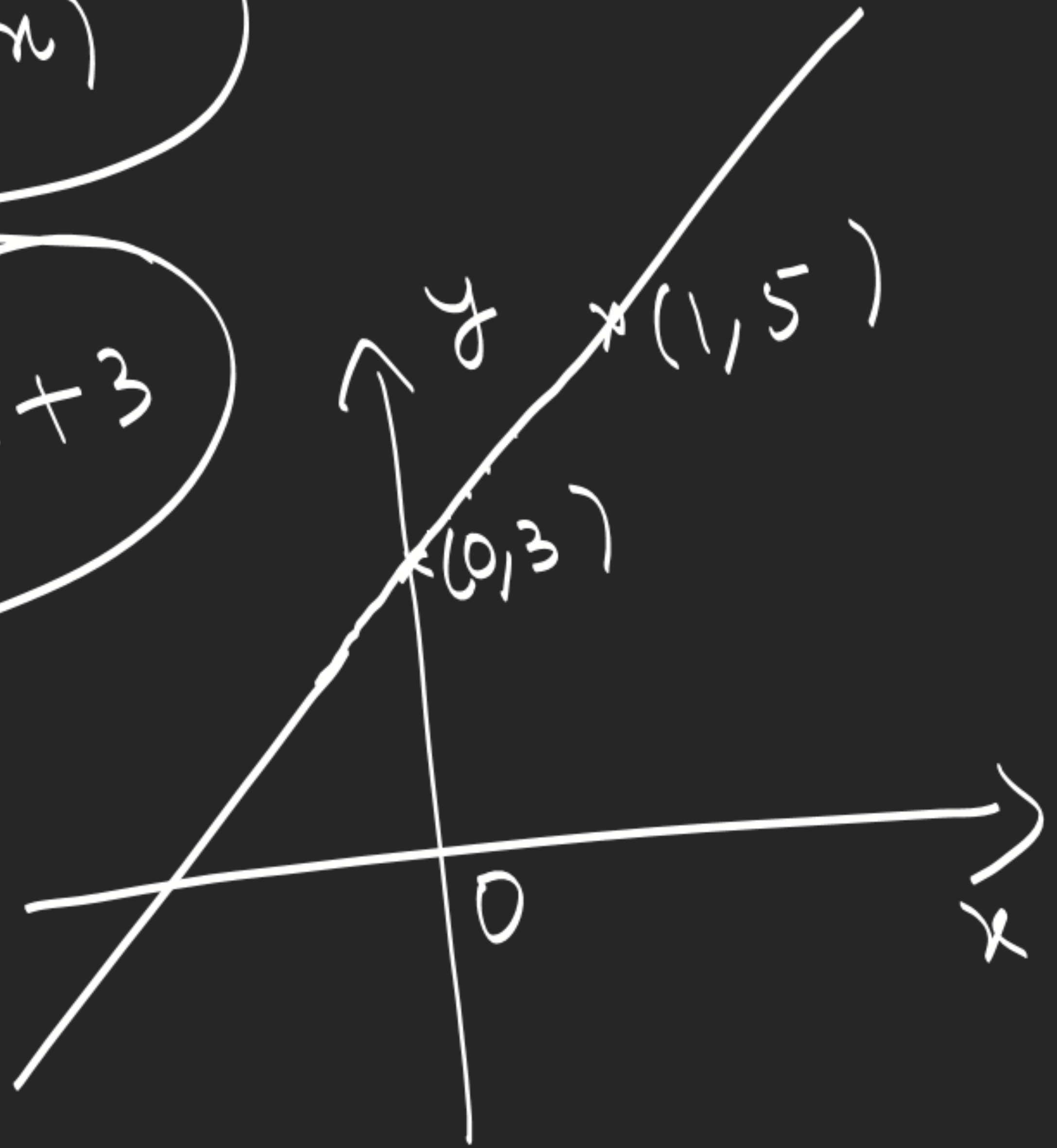
$$y = \underline{f}(x)$$

$$y = 2x + 3$$



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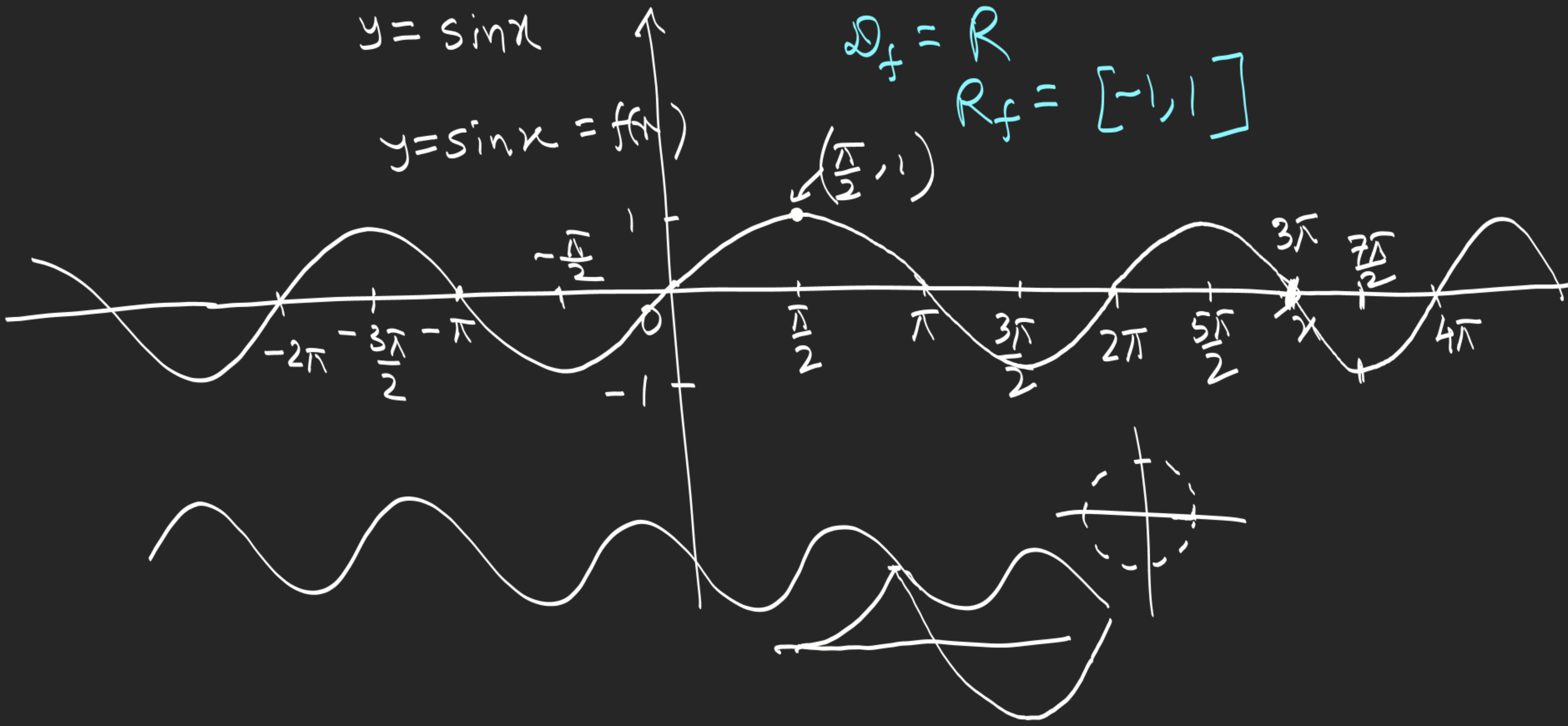
$y = \sin x$

$y = \sin x = f(x)$

$D_f = R$

$R_f = [-1, 1]$



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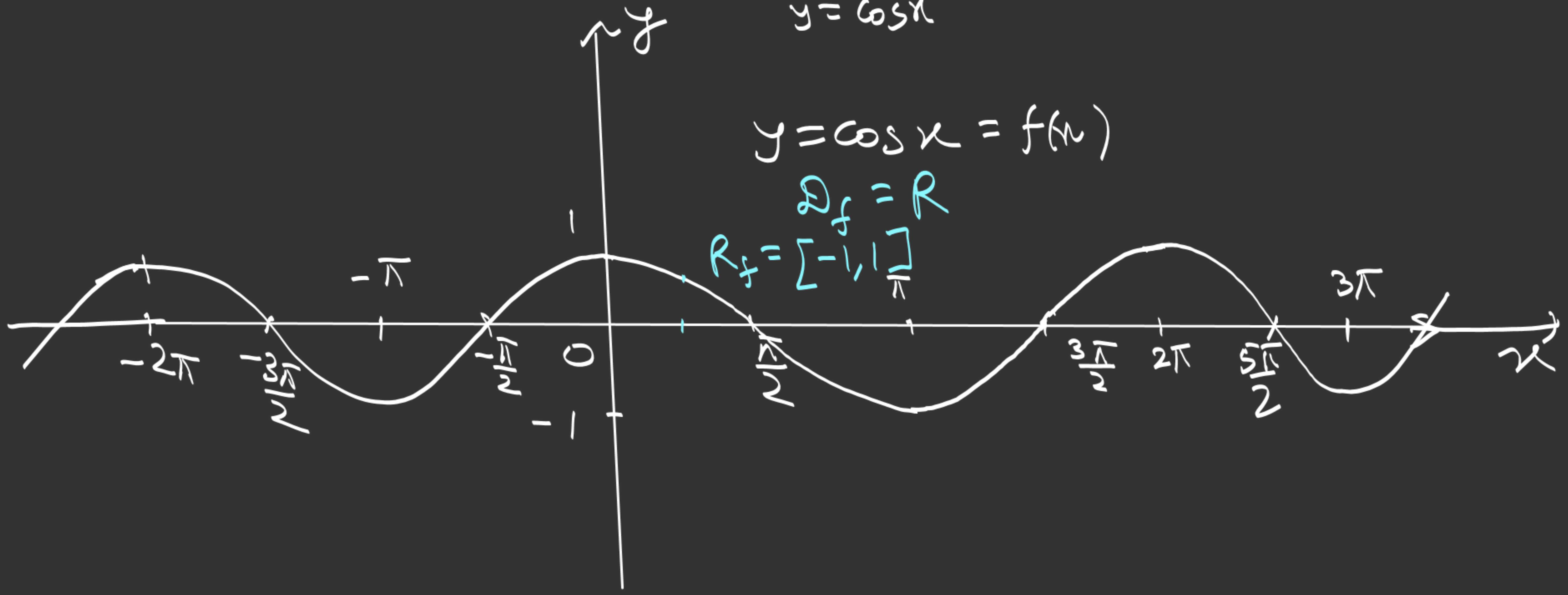
$y = \cos x$



$y = \cos x = f(x)$

$D_f = R$

$R_f = [-1, 1]$

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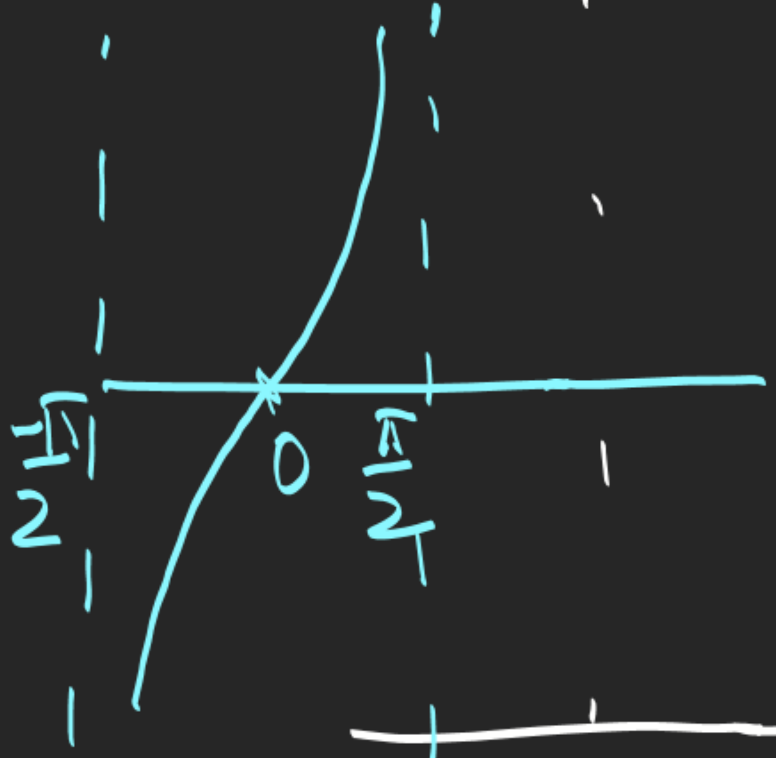
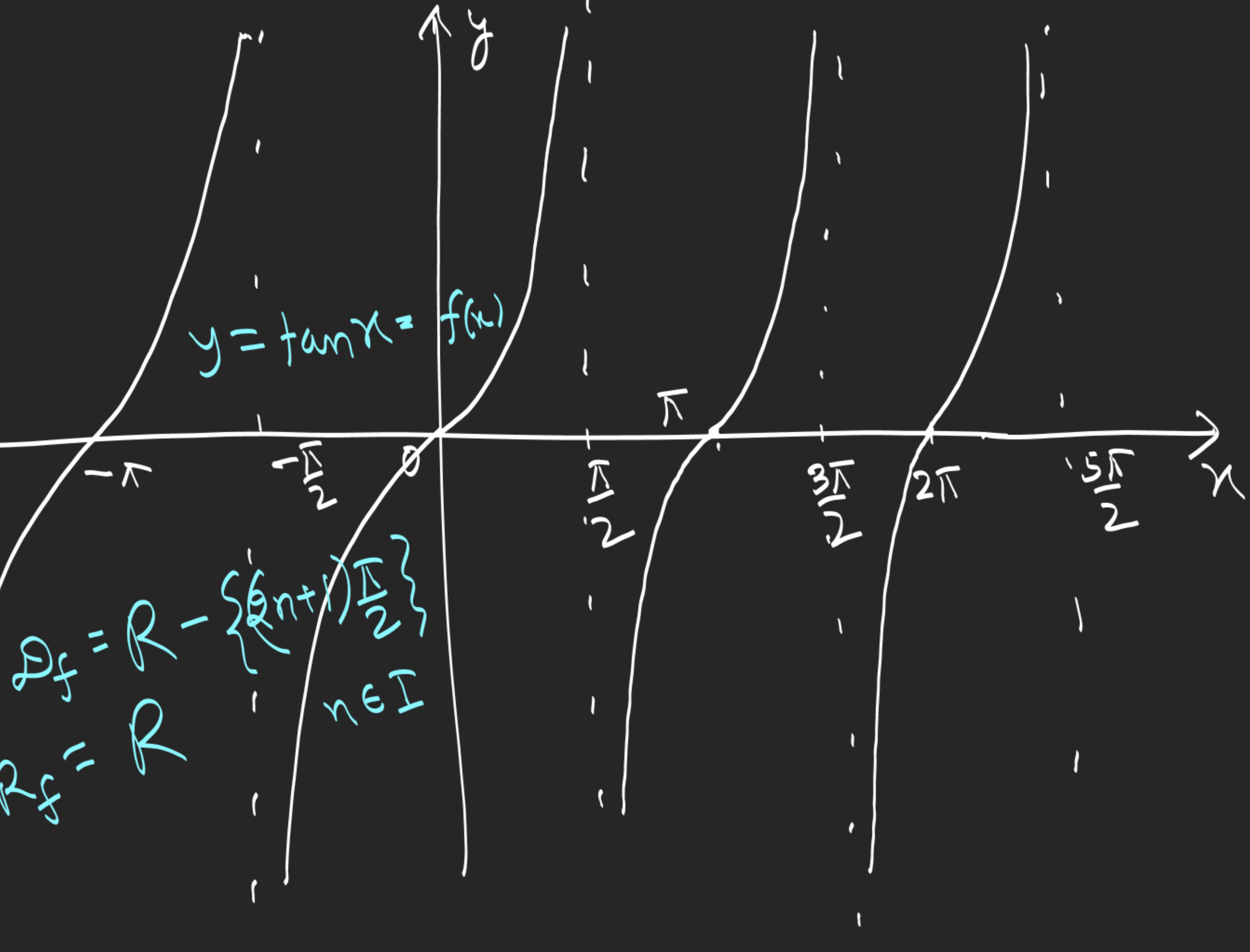


S.L. Loney

$\boxed{\text{Ex} - 6}$

$\boxed{6 - 15}$



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

$D_f = R - \left\{(2n+1)\frac{\pi}{2}\right\}$

$n \in I$

$R_f = R$

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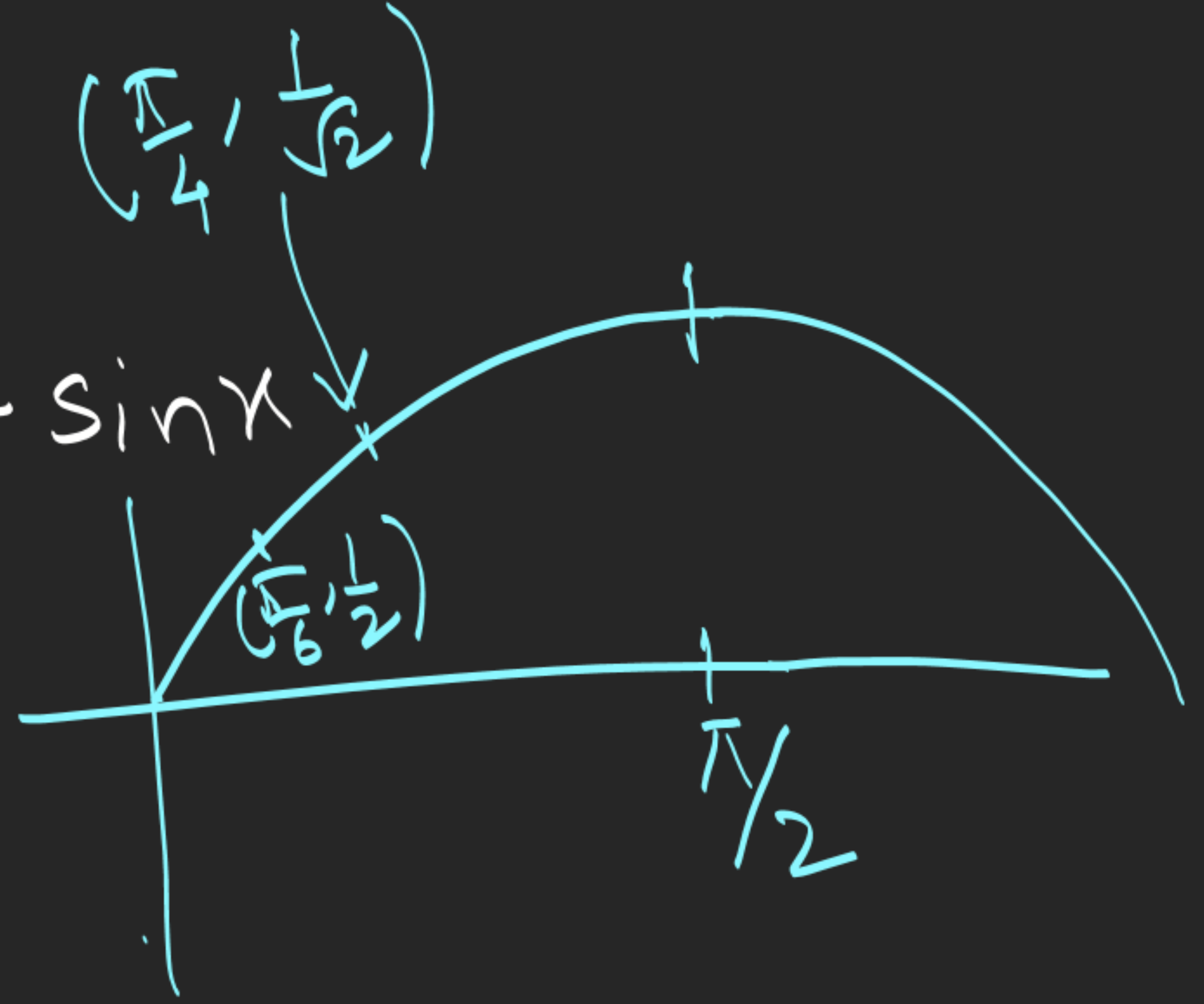
Function

$$y = f(x) = x^3 - 3x^2 + \sin x$$

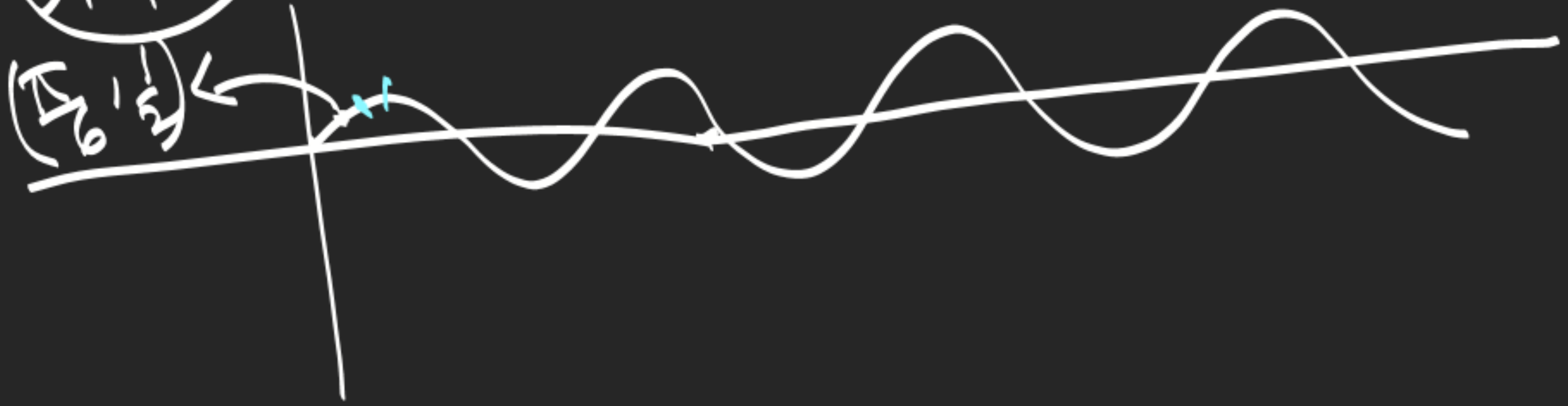
$$1 - 3 + \sin 1$$

1,

$$(x, y) = (1, \sin 1 - 2)$$



$$y = \sin x$$



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Domain of Function

$\sqrt{0.1}$ $f(x)$

$$\boxed{D_f = (-\infty, 1] \cup \{2\} \cup [3, \infty)}$$

Set of all

$$f(x) = \sqrt{\underbrace{(x-1)(x-2)^2(x-3)}}$$

$+ \quad 1 \quad - \quad 2 \quad - \quad 3 \quad +$

$$(x-1)(x-2)^2(x-3) \geq 0$$

$$f(x) = \frac{1}{x^2 - 3x + 2}$$

$$D_f = R - \{1, 2\}$$

$$= (-\infty, 1) \cup (1, 2) \cup (2, \infty)$$

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Range of Function

$$y = f(x)$$

set of all y values attained is called range.

$$\text{Range} \leftarrow y = f(x) \rightarrow \text{Domain}$$

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$$f(x) = \frac{1}{x}$$

$$\boxed{\begin{aligned} D_f &= R - \{0\} \\ R_f &= R - \{0\} \end{aligned}}$$

$y = -367$ at

$x = -\frac{1}{367}$

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

$33/5 = y \;,\quad x = \frac{5}{33}$