MEXT TRIG EXAMPLES :

1)CONDITION BASED CALCULATIONS (三角関数、式の値や基本な式,三角方程式や不等式)

2009Q1 (5)

(5) If $\dfrac{1}{1-\sin\theta}+\dfrac{1}{1+\sin\theta}=6$ and $0<\theta<\dfrac{\pi}{2}$, then $\tan\theta=$ $\square$.

2012 Q1 (4)

(4) When $\cos 2x+3\cos x-1=0$ $(0\leq x\leq\pi)$, then $x=$ $\square$.

2014 Q1 (1)

(1) If the equation $\sqrt{2}x^2-\sqrt{3}x+k=0$ with k a constant has two solutions $\sin\theta$ and $\cos\theta$ $\left(0\leq\theta\leq\dfrac{\pi}{2}\right)$, then $k=$ $\square$.

2015 Q1 (2)

(2) If $\cos\theta=\sqrt{\dfrac{1}{2}+\dfrac{1}{2\sqrt{2}}}$ and $\sin\theta=-\sqrt{\dfrac{1}{2}-\dfrac{1}{2\sqrt{2}}}$ with $0\leq\theta<2\pi$, it follows that $2\theta=$ $\square$ π.

2016 Q1 (1)

(2) If α, β are numbers satisfying $0<\alpha<\dfrac{\pi}{4}$, $0<\beta<\dfrac{\pi}{4}$, $\alpha+\beta=\dfrac{\pi}{4}$, it follows that $(\tan\alpha+1)(\tan\beta+1)=$ $\square$.

2)AS FUNCTION :

FINDING THE MINIMUM OR MAXIMUM(合成)

2013 Q1 (1)

(1) The minimum of the function $f(x) = (2+\sin x)(5-\sin x)$ is ☐

2016 Q1 (2)

(3) When $x+y=\dfrac{2\pi}{3}$, $x \geq 0$, $y \geq 0$, the maximum of $\sin x + \sin y$ is ① ☐, and the minimum of that is ② ☐.

2018 Q1 (4)

(4) The maximum value of the function $\sin 3x$ for $\dfrac{5}{18}\pi \leq x \leq \dfrac{2}{3}\pi$ is ① ☐, and the minimum value of that is ② ☐.

2019 Q1 (4)

(5) When $|x| \leq \dfrac{\pi}{2}$, the maximum of $\sin x + \cos x$ is ① ☐,

and the minimum of that is ② ☐.

3)SOLVING INEQUALITIES AND EQUATIONS (三角方程式や三角不等式)

2017 Q1 (2)

(2) The set of all solutions of the inequality $2\cos x - \sqrt{3} < 0$ with $0 \leq x < 2\pi$ is the interval ① ☐ $\pi < x <$ ② ☐ π.

(2020 doesn't contain a trig question)

Frequency: Condition based expressions –finding the min and max-solving equations and inequalities

The hit box of 三角関数 is 1-2 points as there most of the time only one question in Q1.

Always appears in Q1