

THUR 11-01-07

①

COLLECT: BG TEST & CORRECTIONS

FUN GIFT

⑫  $2 \sin \frac{7\pi}{8} \cos \frac{8\pi}{7}$

⑮  $\cos 4a$

⑭  $\frac{\sqrt{2}}{2}$

⑳  $\cos \frac{9\pi}{16}$

⑯ 0

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㉒  $\cos 16$

㉘  $\frac{1}{4} \sin 10x$

㉔ 0

㉚  $\cos \frac{2}{3}x - \cos \frac{1}{3}x$   
CANNOT BE SIMPLIFIED!

㉖ -2

$$\textcircled{29} \quad \frac{1}{2} \sin 5x \cos 5x$$

$$= \frac{1}{4} \cdot 2 \cdot \sin 5x \cos 5x$$

$$= \frac{1}{4} \cdot \sin 2(5x)$$

$$= \underline{\underline{\frac{1}{4} \sin 10x}}$$

$$\textcircled{30} \quad \underline{\underline{\cos \frac{2}{3}x - \cos \frac{1}{3}x}}$$

②

$$\textcircled{20} \quad -\sqrt{\frac{1}{2} \left( 1 + \cos \frac{9\pi}{9} \right)} = \cos \frac{1}{2}x$$

$$= \cos \frac{1}{2} \left( \frac{9\pi}{9} \right)$$

$$= \underline{\underline{\cos \frac{9\pi}{18}}}$$

$$\textcircled{24}) \sin \frac{16}{5} - \underbrace{2 \sin \frac{8}{5} \cos \frac{8}{5}}$$

$$= \sin \frac{16}{5} - \sin 2 \left( \frac{8}{5} \right)$$

$$= \sin \frac{16}{5} - \sin \frac{16}{5}$$

$$= \underline{\underline{0}}$$

3

# GREEK ALPHABET

4

$\alpha$  "ALPHA"

$\beta$  "BETA"  $\beta$   $\beta$

$\gamma$  "GAMMA"

$\theta$  "THETA"

$\Sigma$  "SIGMA"

# R19 ANSWERS

(5)

① DONE IN CLASS - CHECK YOUR NOTES

② LIKE #1 - CHECK IN YOUR GROUPS

$$\begin{aligned} \textcircled{3} \tan(-a) &= \tan(0-a) \\ &= \frac{\tan 0 - \tan a}{1 + \tan 0 \cdot \tan a} \\ &= \frac{0 - \tan a}{1 + 0 \cdot \tan a} \\ &= \frac{-\tan a}{1} \\ &= -\tan a \end{aligned}$$

d.  $\therefore \tan(-a) = -\tan a, \forall a \in \mathbb{R}$   
b) (tan IS AN ODD FUNCTION)

$$\begin{aligned} \text{c) } \tan(-a) &= \frac{\sin(-a)}{\cos(-a)} \\ &= \frac{-\sin a}{\cos a} \\ &= \underline{\underline{-\tan a}} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \tan(x+\pi) &= \frac{\tan x + \tan \pi}{1 - \tan x \cdot \tan \pi} \\ &= \frac{\tan x + 0}{1 - \tan x \cdot 0} \end{aligned}$$

$$\text{a) } = \tan x$$

b) DISCUSS IN GROUPS

$$\textcircled{5} \text{a) } \sqrt{3} + 2 \text{ c) } \sqrt{3} - 2$$

$$\textcircled{6} \text{a) } -1 \text{ b) } \sqrt{3} \text{ c) } \frac{\sqrt{3}}{3}$$

$$\text{d) } -1 \text{ e) } \text{UND} \text{ f) } -\sqrt{3}$$

$$\textcircled{9} 2 - \sqrt{3}$$

P.19 CORRECTIONS (11) In terms of tan (6)

(14) a)  $\cos x$

(16) a)  $\tan \frac{7\pi}{6}$  b)  $\csc \left( -\frac{3\pi}{4} \right)$  c)  $\cot \left( -\frac{7\pi}{6} \right)$

d)  $\sec \frac{4\pi}{3}$

e)  $\tan \frac{19\pi}{2}$

# "BASICS" of tan

⑦

$$\tan(-x) = -\tan x$$

000

$$\forall x \in \mathbb{R}$$

$$\tan(0-x)$$

⋮

$$\frac{\sin(-x)}{\cos(-x)}$$

PERIOD?  $\pi$

$$\tan(x + k\pi) = \tan x; k \in \mathbb{Z}$$

QUANT?  $\{1, 3\}$

$\rightarrow \{2, 4\}$

$$\tan(a \pm b) = \frac{\tan a \pm \tan b}{1 \mp \tan a \tan b}$$

$$\tan \frac{1}{2}x = \frac{\sin x}{1 + \cos x} = \frac{1 - \cos x}{\sin x}$$

$\forall x \in \mathbb{R}$

⑧

CHECK:

$\tan\left(\frac{7\pi}{8}\right)$	$\frac{-\sqrt{2}-\sqrt{2}}{\sqrt{\sqrt{2}+2}}$
$\tan\left(\frac{7\pi}{8}\right)$	-0.414213562373
$-\sqrt{2}+1$	-0.414213562373

$$\begin{aligned} \tan \frac{7\pi}{8} &= \tan \frac{1}{2}\left(\frac{7\pi}{4}\right) \\ &= \frac{\sin \frac{7\pi}{4}}{1 + \cos \frac{7\pi}{4}} \end{aligned}$$

$$= \frac{-\frac{\sqrt{2}}{2}}{1 + \frac{\sqrt{2}}{2}}$$

TRIG  
STOPS.

$$= \frac{-\sqrt{2}}{2 + \sqrt{2}} \cdot \frac{2 - \sqrt{2}}{2 - \sqrt{2}}$$

$$= \frac{-2\sqrt{2} + 2}{4 - 2}$$

$$= \frac{-2\sqrt{2} + 2}{2}$$

$$= \frac{-2\sqrt{2}}{2} + \frac{2}{2}$$

$$= \underline{\underline{-\sqrt{2} + 1}}$$



DERIVE AN IDENTITY FOR  $\tan 2x$  (IN TERMS OF  $\tan$ ) <sup>(9)</sup>

1 WAY

$$\begin{aligned}\tan 2x &= \tan(x+x) \\ &= \frac{\tan x + \tan x}{1 - \tan x \cdot \tan x} \\ &= \frac{2 \tan x}{1 - \tan^2 x}\end{aligned}$$

2<sup>nd</sup> WAY

$$\tan 2x = \frac{\sin 2x}{\cos 2x}$$

NO,  
A  
GOOD  
ID

O.T.L.

- CORRECT TODAY'S O.T.L.
- KNOW "BASICS" OF tan
- P.19 8a, b, c, e  
10, 11, 6g-j