

INTENSIVE REVISION QUESTIONS (ERQ)
SET 16-TROGO FUNCTIONS

Name :

Form :

Teacher:

1. Given $\tan \beta = -\frac{3}{4}$ and $270^\circ < \beta < 360^\circ$. Without using calculator, find the value of
 - (a) $\sin \beta$,
 - (b) $\cos \beta$,
 - (c) $\cot \beta$.[4 marks]

2. Express the following expressions as a single trigonometric function.
 - (a) $2 \cos 35^\circ \sin 35^\circ$
 - (b) $\frac{2 \tan 46^\circ}{1 - \tan^2 46^\circ}$[4 marks]

3. For each of the following trigonometric functions, determine the reference angle. Hence, find the value of the trigonometric function.
 - (a) $\sin 270^\circ$
 - (b) $\cot 210^\circ$
 - (c) $\operatorname{cosec} \left(-\frac{9}{8} \pi \right)$[3 marks]

4. Given $\cos x = -0.6$ and $0^\circ \leq x \leq 180^\circ$. Without using calculator, find the value of
 - (a) $\tan (x + 225^\circ)$,
 - (b) $\cot x - \sin x$.[4 marks]

5. Solve the equation $\sin x = -\frac{1}{2}$ for $0 \leq x \leq 2\pi$. [2 marks]

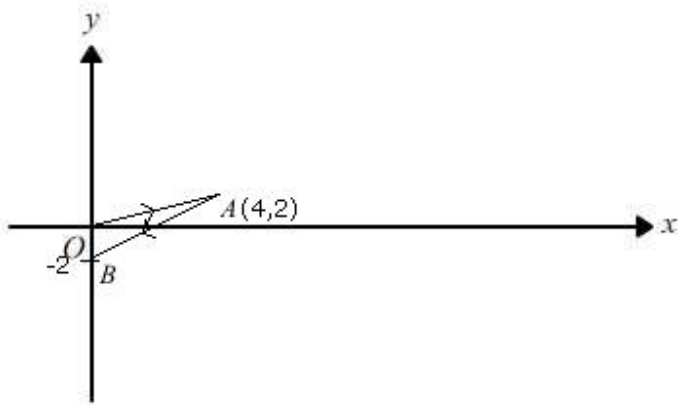
6. Given $\tan \beta = \frac{5}{12}$ and $0^\circ < \beta < 90^\circ$. Without using calculator, find the value of
 - (a) $\sin \beta$,
 - (b) $\cos \beta$,
 - (c) $\cot \beta$.[4 marks]

7. Express the following expressions as a single trigonometric function.
 - (a) $2 \cos^2 5^\circ - 1$
 - (b) $1 - 2 \sin^2 88^\circ$
 - (c) $\cos^2 90^\circ - \sin^2 90^\circ$[4 marks]

8. Solve the equation $\cos \frac{x}{2} = \frac{1}{2}$ for $0 \leq x \leq 2\pi$. [2 marks]

9. Express the following expressions as a single trigonometric function.
- (a) $2 \cos 75^\circ \sin 75^\circ$
- (b) $\frac{2 \tan 54^\circ}{1 - \tan^2 54^\circ}$ [4 marks]
10. Solve the equation $\sin x = -\frac{1}{2}$ for $0 \leq x \leq 2\pi$. [2 marks]
11. Find all the values of x that satisfy the trigonometric equation $6 \sin x \cos x = 5 \cos x$ for $0^\circ \leq x \leq 360^\circ$. [4 marks]
12. Given $\cos x = -0.8$ and $0^\circ \leq x \leq 180^\circ$. Without using calculator, find the value of
- (a) $\tan(x + 135^\circ)$,
- (b) $\cot x - \sin x$. [4 marks]

13.



Based on the unit circles above, determine the value of each of the following trigonometric functions.

- (a) $\sin \alpha$
- (b) $\cos \alpha$
- (c) $\tan \alpha$
- (d) $\sin \beta$
- (e) $\cos \beta$
- (f) $\tan \beta$ [3 marks]
14. Find all the values of x that satisfy the trigonometric equation $10 \sin x \cos x = 5 \cos x$ for $0^\circ \leq x \leq 360^\circ$. [4 marks]
15. Given that $\sin \alpha = \frac{k}{8}$ and α is an acute angle, find the value of each of the following trigonometric functions in terms of k .
- (a) $\operatorname{cosec} \alpha$
- (b) $\sec \alpha$
- (c) $\cot \alpha$ [3 marks]

16. Given that $\sin \alpha = \frac{k}{7}$ and α is an acute angle, find the value of each of the following trigonometric functions in terms of k .
- cosec α
 - sec α
 - cot α
- [3 marks]
17. For each of the following trigonometric functions, determine the reference angle. Hence, find the value of the trigonometric function.
- $\sin 340^\circ$
 - $\cot 235^\circ$
 - $\text{cosec} \left(-\frac{4}{3} \pi \right)$
- [3 marks]
18. Solve the equation $\cos \frac{x}{3} = \frac{1}{2}$ for $0 \leq x \leq 2\pi$. [2 marks]
19. Solve the equation $\sin x = -\frac{1}{2}$ for $0 \leq x \leq 2\pi$. [2 marks]
20. Solve the equation $\cos \frac{x}{4} = \frac{1}{2}$ for $0 \leq x \leq 2\pi$. [2 marks]

Answers:

1.

(a) $-\frac{3}{5}$

(b) $\frac{4}{5}$

(c) $-\frac{4}{3}$

2. (a) $\sin 70^\circ$

(b) $\tan 92^\circ$

3. (a) Reference angle = 90° , $-\sin 90^\circ = -1$

(b) Reference angle = 30° , $\cot 210^\circ = 1.7321$

(c) Reference angle = $\frac{\pi}{8}$, 2.6131

4.

(a) $-\frac{1}{7}$

(b) $-\frac{31}{20}$

5.

$$\frac{7\pi}{6} \text{ or } \frac{11\pi}{6}$$

6.

(a) $\frac{5}{13}$

(b) $\frac{12}{13}$

(c) $\frac{12}{5}$

7. (a) $\cos 10^\circ$
(b) $\cos 176^\circ$
(c) $\cos 180^\circ$

8.

$$\frac{2\pi}{3}$$

9. (a) $\sin 150^\circ$
(b) $\tan 108^\circ$

10.

$$\frac{7\pi}{6} \text{ or } \frac{11\pi}{6}$$

11. $56.44^\circ, 90^\circ, 123.56^\circ, 270^\circ$

12. (a) -7

(b) $-\frac{29}{15}$

13. (a) -0.707
(b) -0.707
(c) 1
(d) -0.469
(e) 0.883
(f) -0.5311

14. $30^\circ, 90^\circ, 150^\circ, 270^\circ$

15.

(a) $\frac{8}{k}$

(b) $\frac{8}{\sqrt{64 - k^2}}$

(c) $\frac{\sqrt{64 - k^2}}{k}$

16.

(a) $\frac{7}{k}$

(b) $\frac{7}{\sqrt{49 - k^2}}$

(c) $\frac{\sqrt{49 - k^2}}{k}$

17. (a) Reference angle = 20° , $-\sin 20^\circ = -0.342$

(b) Reference angle = 55° , $\cot 235^\circ = 0.7002$

(c) Reference angle = $\frac{\pi}{3}$, 1.1547

18. π

19.

$\frac{7\pi}{6}$ or $\frac{11\pi}{6}$

20.

$\frac{4\pi}{3}$