

TEST 3 REVIEW PROBLEMS

① USE AN ADDITION FORMULA TO SIMPLIFY $\sin(x + \frac{\pi}{2})$.

② USE AN ADDITION FORMULA TO FIND THE VALUE OF $\cos 75^\circ$.

③ FIND EACH OF THE FOLLOWING NUMBERS:

A) $\tan^{-1} 1 = \underline{\hspace{2cm}}$

B) $\tan^{-1} \sqrt{3} = \underline{\hspace{2cm}}$

C) $\tan(\arctan \frac{5}{9}) = \underline{\hspace{2cm}}$

D) $\sin^{-1} \frac{1}{2} = \underline{\hspace{2cm}}$

E) $\sin^{-1} \frac{\sqrt{2}}{2} = \underline{\hspace{2cm}}$

F) $\sin^{-1}(\sin \frac{3\pi}{2}) = \underline{\hspace{2cm}}$

④ EVALUATE EACH OF THE FOLLOWING:

A) $\sin 300^\circ$

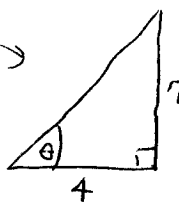
B) $\cos 240^\circ$

C) $\sin 750^\circ$

⑤ FOR THE ANGLE θ IN THE RIGHT TRIANGLE SHOWN,

FIND A) $\sin 2\theta$

B) $\cos 2\theta$



⑥ A) FIND ALL SOLUTIONS (IN RADIANS) FOR THE EQUATION $\sin \theta = -1$.

B) FIND ALL ANGLES θ (IN RADIANS) WITH $0 \leq \theta < 2\pi$ WHICH SATISFY $\cos \theta = -\frac{\sqrt{3}}{2}$.

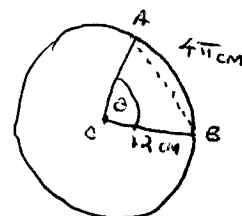
⑦ A) IF $\sin \theta = -\frac{4}{5}$ AND $\pi < \theta < \frac{3\pi}{2}$, FIND $\cos \theta$.

B) IF $\tan \theta = -\frac{5}{12}$ AND $\frac{3\pi}{2} < \theta < 2\pi$, FIND $\sin \theta$.

⑧ FOR THE DIAGRAM SHOWN, WHERE $r = 12$ CM AND $s = 4\pi$ CM,

A) FIND THE AREA OF THE TRIANGLE $\triangle OAB$.

B) FIND THE AREA OF THE CIRCULAR SECTOR OAB .



⑨ IF $\cos \theta = \frac{1}{8}$ AND $\frac{3\pi}{2} < \theta < 2\pi$, FIND $\cos \frac{\theta}{2}$.

⑩ EXPRESS $\sin^2 3\theta \cos^2 3\theta$ IN A FORM THAT DOES NOT INVOLVE POWERS OR PRODUCTS OF TRIG FUNCTIONS.

⑪ SIMPLIFY THE FOLLOWING EXPRESSIONS:

A) $x^4 \cdot \frac{1}{2} (5x+9)^{-\frac{1}{2}} \cdot 5 + 4x^3 \sqrt{5x+9}$

B) $\frac{(x^2+75)^2 \cdot 4 - 4x \cdot 2(x^2+75) \cdot 2x}{(x^2+75)^4}$

⑫ FIND $\sin(2\tan^{-1} 5)$.

⑬ SUBSTITUTE $x = 5 \sin \theta$ (FOR $0 < \theta < \frac{\pi}{2}$) IN THE EXPRESSION $\frac{x}{\sqrt{25-x^2}}$ AND SIMPLIFY THE RESULT AS MUCH AS POSSIBLE.

⑭ A) SIMPLIFY $\sqrt{1-\cos x}$ (FOR $0 \leq x \leq 2\pi$) USING A HALF-ANGLE FORMULA.

B) FIND THE ACUTE ANGLE (IN RADIANS) BETWEEN THE LINES

$y = 2x + 1$ AND $y = 5x - 17$.