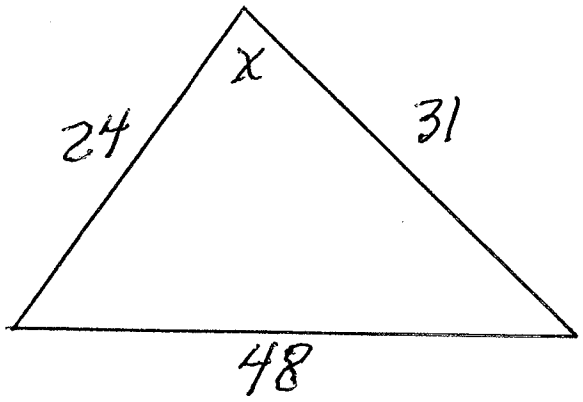
Math 1523 Exam Two – Form AB name: _____

Instructor _____ section: _____

Part One. Place your answers on the scantron. Use Special Codes to identify your section. Also, darken in your name and ID #.

1) Find the measure of the angle marked with an x in the triangle to the right.

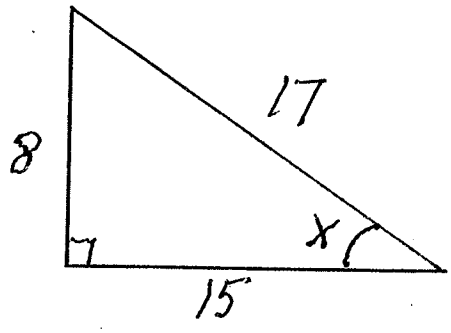
(in degrees)



A) 142° B) 121° C) 136° D) 88° E) 79°

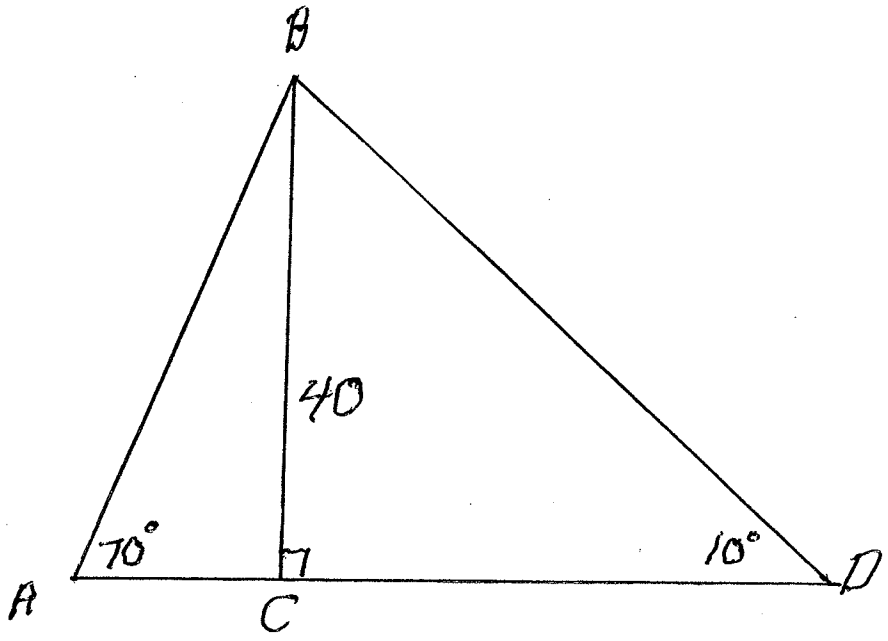
2) Given the right triangle to the right, find the value of

sin 2 x + cos 2 x



A) $\frac{46}{17}$ B) $\frac{79}{289}$ C) $\frac{529}{289}$ D) $\frac{401}{289}$ E) 1

3) Given the triangle to the right with BC = 40 , angle A is 70 degrees and angle D is 10 degrees, find the length of segment AD.



A) 272.9 B) 188.6 C) 241.4 D) 94.4 E) None of these

4) What is the complete solution set for $\sin x - \cos x = 0$ on $0 \le x \le 2\pi$?

A) $\frac{\pi}{4}$ B) $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$ C) $\frac{\pi}{4}, 0$ D) $\frac{\pi}{4}, \frac{3\pi}{4}$ E) $\frac{\pi}{4}, \frac{5\pi}{4}$

5) Which of the following is equivalent to $\frac{1 - 2\sin^2 x}{2 \sin x \cos x}$?

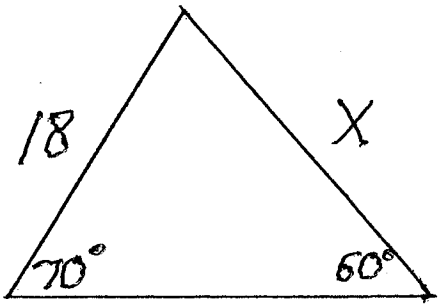
A) cot x B) tan 2 x C) cot 2 x D) $\tan^2 x$ E) $\cot^2 x$

6) Which of the following is true for all defined values of x and y ?

A) $(\cos x + \sin x)^2 = 1$ B) $\frac{2}{\sec x \csc x} = \sin 2x$ C) $\frac{\cot x}{\tan x} = 1$

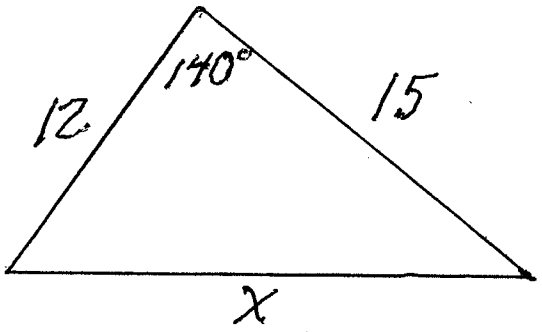
D) $\sin x + \cos x = 1$ E) $\frac{\sin 2x}{\cos 2x} = \tan x$

7) Given the triangle to the right, find the length of the side marked with the letter x.



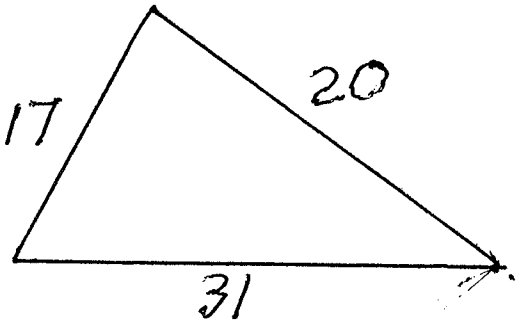
A) 45.7 B) 22.6 C) 19.5 D) 24.8 E) 12.3

8) Given the triangle to the right, find the length of the side marked with the letter x.



A) 25.4 B) 19.2 C) 11.7 D) 21 E) 23.8

9) Find the area of the triangle pictured to the right.



A) 170 B) 204 C) 142.6 D) 155.8 E) 182.5

10) What is the exact value of $\cos 15^0$?

A) $\frac{\sqrt{6}-\sqrt{2}}{4}$ B) $\frac{\sqrt{6}+\sqrt{2}}{2}$ C) $\frac{\sqrt{6}+\sqrt{2}}{4}$ D) $\frac{\sqrt{2}-1}{2}$ E) None of these

11) Which of the following is equivalent to $\frac{\cot x}{\csc x}$?

A) $\cos x$ B) $\tan x$ C) $\sin x$ D) $\sin x \cos x$ E) $\sin^2 x \cos x$

12) What is the complete solution set for $\sin^3 x = \sin x$ on $0 \le x < 2\pi$?

A) $\frac{\pi}{2}, \frac{3\pi}{2}$ B) $\frac{\pi}{2}, 0$ C) $\frac{\pi}{2}, \frac{3\pi}{2}, 0$ D) $\frac{\pi}{2}, \frac{3\pi}{2}, 0, \pi$ E) $\frac{\pi}{2}, \frac{3\pi}{2}, \pi$

13) $1 + \frac{1-\cos^2 x}{1-\sin^2 x} = ?$

A) $\csc^2 x$ B) 2 C) $2 + \tan^2 x$ D) 0 E) $\sec^2 x$

14) Which of the following is equivalent to $\cos\left(\frac{3\pi}{2} - x\right)$?

A) $-\sin x$ B) $-\cos x$ C) $\cos x - \sin x$ D) $\sin x$ E) $\cos x$

15) If angle A is in the first quadrant and $\cos A = \frac{5}{13}$, then $\sin 2A = ??$

A) $\frac{10}{13}$ B) $\frac{120}{169}$ C) $\frac{60}{169}$ D) $\frac{84}{169}$ E) $\frac{12}{13}$

16) Mark both A and B on question number 16 of your scantron

Part Two. Answer your questions showing all work and then placing answer in the box provided.

1) Given that $\sin A = \frac{12}{13}$ and $\tan B = \frac{36}{77}$ and both angles A and B are in quadrant one, find the exact value of $\sin (B - A)$

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2) Rewrite $(\sin x + \cos x)^2 + (\sin x - \cos x)^2$ as a single number of a single trigonometric function.

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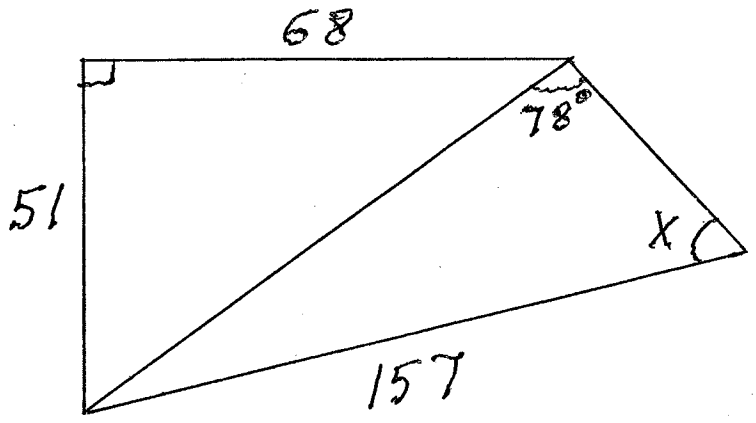
3) In the quadrilateral to the right, find the measure of the angle marked with an x to the nearest degree.



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4) Find the complete solution set for $4 \sin^2 x - 5 = \sin x$ on $0 \le x \le 2\pi$

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5) Given that $\sin x = \frac{60}{61}$ and angle x terminates in the second quadrant, find the exact value of $\tan \frac{1}{2} x$.

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6) Write $\frac{1}{2}(\cot x + \tan x)$ as a single trigonometric function.