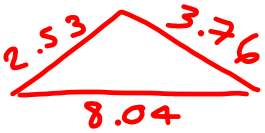
How many solutions does each of these triangles have?

1. a=2.53 , b=3.76 , c=8.04

zero

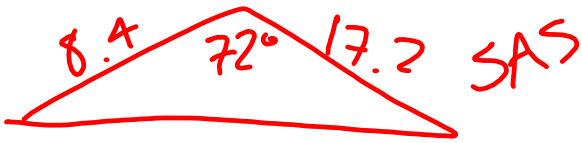


2. A=15° , a=4 , c=11

2

3. A=72° , b=8.4 , c=17.2

1

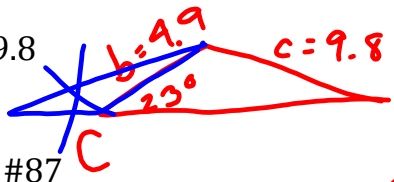


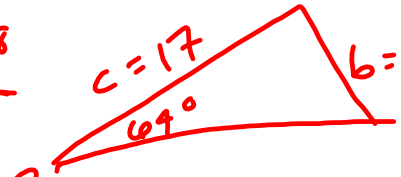
4. B=64° , b=2 , c=17

zero

5. C=23° , b=4.9 , c=9.8

1





ASA

$C = \sin^{-1}\left(\frac{17\sin 64}{2}\right)$

Prove the identity: 6.3 #87

$$\tan 2x = \frac{2}{\cot x - \tan x}$$

Solve the equation: 6.6 #74

$$\sin 4x - \cos 2x = 0 \quad , \quad 0 \le x < 2\pi$$

Prove. $\tan 2x = \frac{2}{\cot x - \tan x}$

$LHS = \tan 2x = \frac{\sin 2x}{\cos 2x} = \frac{2\sin x\cos x}{\cos^2 x - \sin^2 x} \cdot \frac{\frac{1}{\sin x\cos x}}{\frac{1}{\sin x\cos x}}$

$= \frac{\frac{2\sin x\cos x}{\sin x\cos x}}{\frac{\cos^2 x}{\sin x\cos x} - \frac{\sin^2 x}{\sin x\cos x}} = \frac{2}{\cot x - \tan x} = RHS$ ✓

$\frac{2\tan x}{1-\tan^2 x} \cdot \frac{\frac{1}{\tan x}}{\frac{1}{\tan x}}$

Solve. $\sin 4x - \cos 2x = 0 \quad , \quad 0 \le x < 2\pi$

$\sin 2(2x)$

$2\sin 2x\cos 2x - \cos 2x = 0$

$\cos 2x(2\sin 2x - 1) = 0$

$\cos 2x = 0 \qquad 2\sin 2x - 1 = 0$

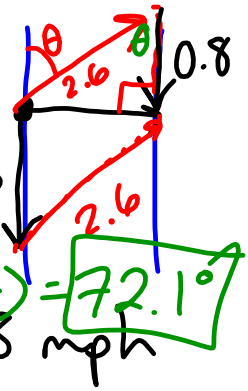
$2x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2} \qquad \sin 2x = \frac{1}{2}$

$x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

$2x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{13\pi}{6}, \frac{17\pi}{6}$

$x = \frac{\pi}{12}, \frac{5\pi}{12}, \frac{13\pi}{12}, \frac{17\pi}{12}$

7.3 # 38



can row 2.6 mph in still water

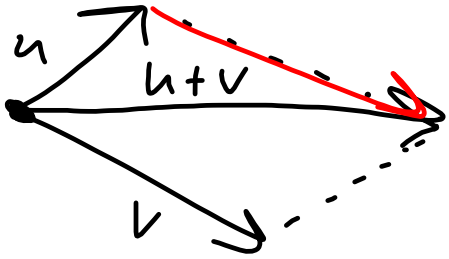
Want to row due east

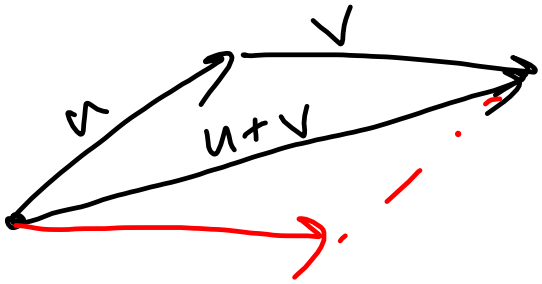
river flows from the north @ 0.8 mph

What heading (angle) of boat is required?

$\cos\theta = \frac{0.8}{2.6}$

$\theta = \cos^{-1}\left(\frac{0.8}{2.6}\right) = 72.1°$



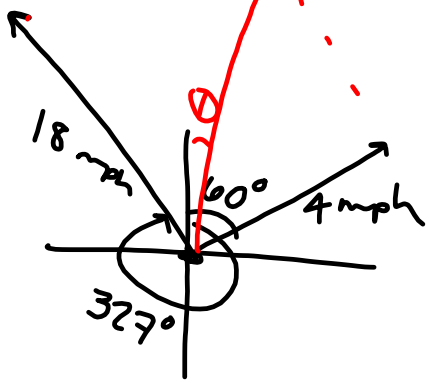


7.3 #40

boat heading of 327° @ 18 mph

current heading of 60° @ 4 mph

course of boat?



7.3 #44

Homework:

- 7.1 #1-21 odd — solving triangles with Law of Sines
- 7.1 #29,30,33,34,35 — word problems with Law of Sines

- 7.2 #9-19 odd — solving triangles with Law of Cosines
- 7.2 #25-29odd; — area
- 7.2 #38,43,46,47,48 — word problems with Law of Cosines
- **7.3 #37, 41, 43** — **word problems with Law of Sines/Cosines**

Expect a **quiz** on Law of Sines/Cosines on **Thursday** (tomorrow, 6 Feb)

Homework due Friday (last homework grade)

Test #4 Canceled

Thurs: continue with law of sines/cosines applications, begin review

Fri, Mon: review for **Comprehensive Final Exam (1:00pm Wed. 12 Feb)**