Homework due Friday (last homework grade):

- 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

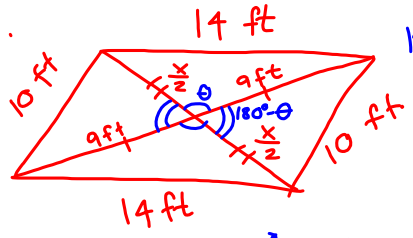
- **7.3 #37, 41, 43 — word problems with Law of Sines/Cosines**

Test #4 Canceled

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

7.2

48.



$10^2 = 9^2 + \left(\frac{x}{2}\right)^2 - 2\left(\frac{x}{2}\right)9\cos(180)$

$14^2 = 9^2 + \left(\frac{x}{2}\right)^2 - 2\left(\frac{x}{2}\right)9\cos\theta$

$\cos(180°-\theta) = \cos 180°\cos\theta + \sin 180°\sin\theta$

$= (-1)\cos\theta + 0\cdot\sin\theta$

$\cos(180°-\theta) = -\cos\theta$

$10^2 = 9^2 + \frac{x^2}{4} + 9x\cos\theta$

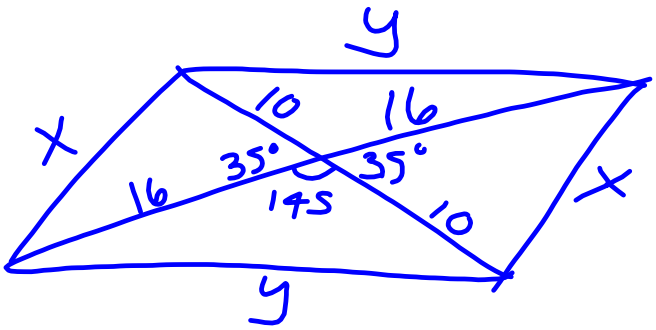
$14^2 = 9^2 + \frac{x^2}{4} - 9x\cos\theta \rightarrow 9x\cos\theta = 9^2 + \frac{x^2}{4} - 14^2$

$10^2 = 9^2 + \frac{x^2}{4} + 9^2 + \frac{x^2}{4} - 14^2$

$10^2 - 9^2 - 9^2 + 14^2 = \frac{x^2}{2}$

$\sqrt{(10^2 - 9^2 - 9^2 + 14^2)\cdot 2} = x$

47.



$x^2 = 10^2 + 16^2 - 2 \cdot 10 \cdot 16 \cdot \cos 35°$

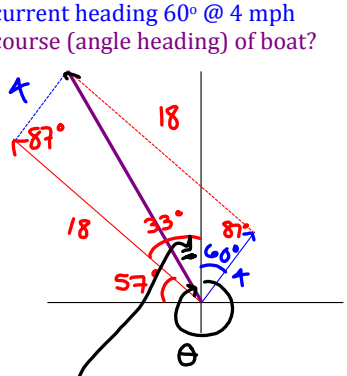
$y^2 = 10^2 + 16^2 - 2 \cdot 10 \cdot 16 \cdot \cos 145°$

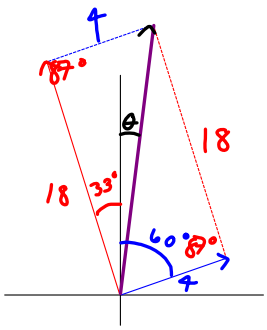
7.3 #40

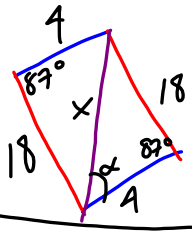
boat heading 327° @ 18mph

current heading 60° @ 4 mph

course (angle heading) of boat?







~~19.7°~~ $21°$ $21°$

$\theta = 360° - ~~19.7°~~$

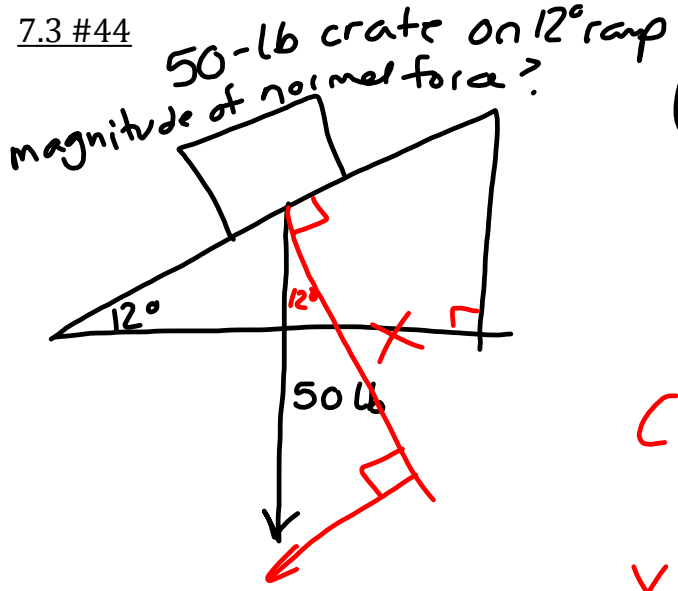
$= 279°$

$x = \sqrt{4^2 + 18^2 - 2 \cdot 4 \cdot 18 \cos 87°} = ~~18.4~~\ 18.2$

$\frac{\sin \alpha}{18} = \frac{\sin 87°}{x}$

$\alpha = \sin^{-1}\left(\frac{18 \sin 87°}{18.2}\right) = ~~77.7°~~\ 81°$

7.3 #44



Object on a ramp

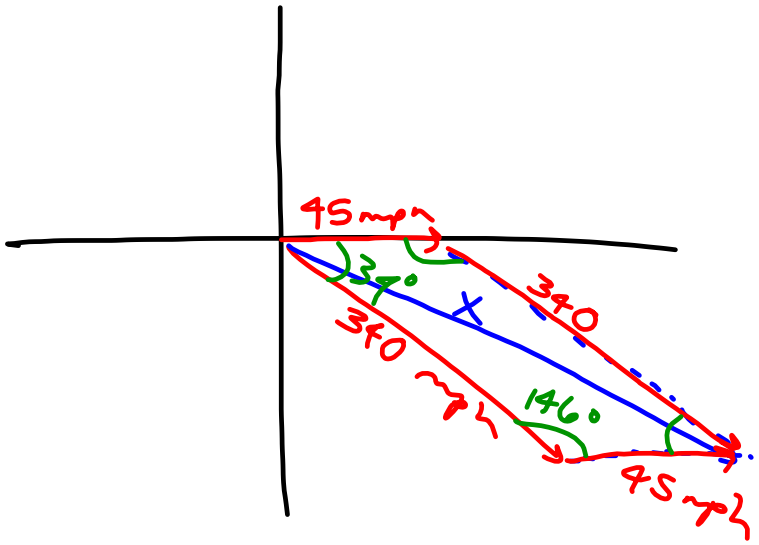
$\cos 12° = \frac{x}{50}$

$x = 50\cos 12°$ lb

$= \boxed{48.9 \text{ lb}}$

7.3

37. airspeed of 340 mph @ 124° heading
45 mph wind from the west



9. $r = 24$ in ; $v = 8$ mi/h ; $\omega = ?$ rev/min

$\frac{v}{r} = \frac{r\omega}{r}$ $\quad \omega = \frac{v}{r} = \frac{v}{1} \cdot \frac{1}{r}$

$\omega = \frac{8 \text{ mi}}{\text{h}} \cdot \frac{1}{24 \text{ in}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{1 \text{ h}}{60 \text{ min}} \cdot \frac{1 \text{ rev}}{2\pi}$

$= \frac{176}{\pi}$ rev/min

39. $y = -3\sec\left(2x + \frac{3\pi}{2}\right) - 1$

amp : 3 V. shift : down 1

per : $\frac{2\pi}{2} = \pi$ h. shift : left $\frac{3\pi/2}{2} = \frac{3\pi}{4}$