13.6B HW

Thursday, May 22, 2014
2:35 PM

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(3) Law of cosines (4) Law of sines (5) Law of sines

(6) Law of cosines (7) Law of sines

(36) $C = 64°$, $a = 19.2$, $c = 18.1$

(37) $A = 45°$, $b = 25.2$, $c = 15.3$

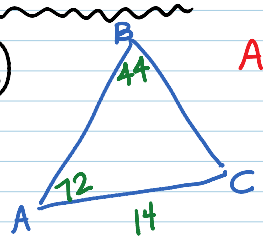
(38) $A = 34.3°$, $B = 80.7°$, $c = 19.3$

(39) $A = 68.2°$, $C = 21.8°$, $b = 16.2$

(40) $A = 81°$, $B = 59°$, $a = 41.5$ OR $A = 19.0°$, $B = 121.0°$, $a = 13.7$

Solutions

(36)



AAS ⇒ Law of Sines
1 Δ

$C = 180 - (44 + 72)$
$C = 64°$

$\frac{\sin 64}{c} = \frac{\sin 44}{14}$

$\frac{c \sin 44}{\sin 44} = \frac{14 \sin 64}{\sin 44}$

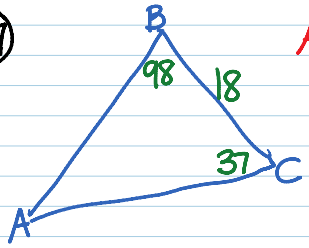
$c = 18.1$

$\frac{\sin 72}{a} = \frac{\sin 44}{14}$

$\frac{a \sin 44}{\sin 44} = \frac{14 \sin 72}{\sin 44}$

$a = 19.2$

(37)



ASA ⇒ Law of Sines
1 Δ

$A = 180 - (98 + 37)$
$A = 45°$

$\frac{\sin 37}{c} = \frac{\sin 45}{18}$

$c = \frac{18 \sin 37}{\sin 45}$

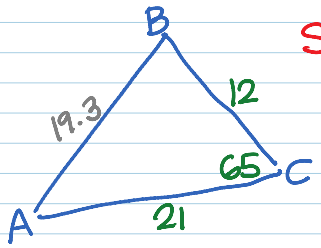
$c = 15.3$

$\frac{\sin 98}{b} = \frac{\sin 45}{18}$

$b = \frac{18 \sin 98}{\sin 45}$

$b = 25.2$

(38)



SAS ⇒ Law of Cosines
1 Δ

$c^2 = a^2 + b^2 - 2ab\cos C$
$c^2 = 12^2 + 21^2 - 2(12)(21)\cos 65$
$c^2 = 372.0$
$c = 19.3$

$\frac{\sin A}{12} = \frac{\sin 65}{19.3}$

$\sin A = \frac{12 \sin 65}{\ldots}$

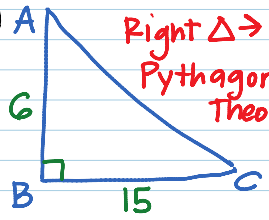
$B = 180 - (34.3 + 65)$
$B = 80.7°$

19.3

$\sin A = .56$

$A = 34.3°$

39



Right Δ → Pythagorean Theorem & Right-Angle Trig

$6^2 + 15^2 = b^2$

$261 = b^2$

$16.2 = b$

$\tan A = \frac{15}{6}$

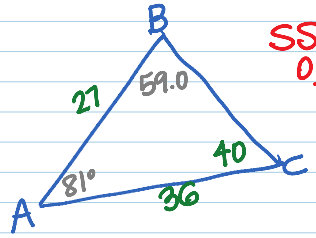
$A = \tan^{-1}\left(\frac{5}{2}\right)$

$A = 68.2°$

$C = 180 - (90 + 68.2)$

$C = 21.8°$

40



SSA

0, 1 or 2 Δ's?

1st Triangle

$\frac{\sin B}{36} = \frac{\sin 40}{27}$

$\frac{27\sin B}{27} = \frac{36\sin 40}{27}$

$\sin B = .86$

$B = \sin^{-1}(.86)$

$B = 59.0$

$A = 180 - (59 + 40)$

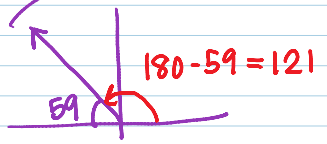
$A = 81°$

$\frac{\sin 81}{a} = \frac{\sin 40}{27}$

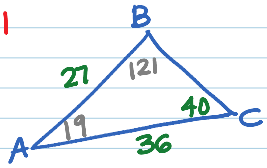
$a = \frac{27\sin 81}{\sin 40}$

$a = 41.5$

2nd triangle



$B = 121°$



$A = 180 - (121 + 40)$

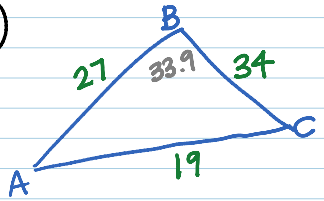
$A = 19°$

$\frac{\sin 19}{a} = \frac{\sin 40}{27}$

$a = \frac{27\sin 19}{\sin 40}$

$a = 13.7$

41



$b^2 = a^2 + c^2 - 2ac\cos B$

$19^2 = 34^2 + 27^2 - 2(34)(27)\cos B$

$361 = 1885 - 1836\cos B$

$-1885 \quad -1885$

$\frac{-1524}{-1836} = \frac{-1836\cos B}{-1836}$

$.83 = \cos B$

$\cos^{-1}(.83) = B$

$33.9° = B$

$\frac{\sin C}{27} = \frac{\sin 33.9}{19}$

$\sin C = \frac{27\sin 33.9}{19}$

$\sin C = .79$

$C = \sin^{-1}(.79)$

$C = 52.4°$

$A = 180 - (33.9 + 52.4)$

$A = 93.7°$