

warm-up

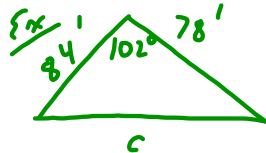
Find  $b$

$A = 75^\circ, B = 50^\circ, a = 7$

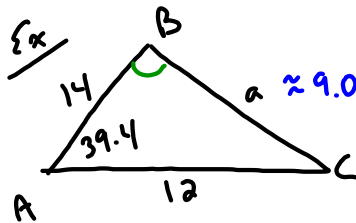
$b \approx 5.55$

5.8 Law of Cosines SAS, SSS

$c^2 = a^2 + b^2 - 2ab \cos C$



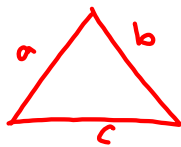
$c^2 = 84^2 + 78^2 - 2(84)(78) \cos 102^\circ$   
 $c^2 = \sqrt{\text{Ans}}$   
 $c \approx 125.95'$



$12^2 = 9^2 + 14^2 - 2(9)(14) \cos B$   
 $-9^2 - 14^2 = -252 \cos B$   
 $\frac{-133}{-252} = \frac{-252 \cos B}{-252}$

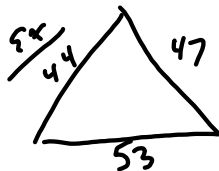
$\cos B = \frac{133}{252}$   
 $\cos^{-1}\left(\frac{133}{252}\right) = B$   
 $58.1^\circ \approx B$

Heron's formula/Heron's



$A = \sqrt{s(s-a)(s-b)(s-c)}$

semi-perimeter  $s = \frac{1}{2}(a+b+c)$



$s = \frac{1}{2}(44+47+53)$   
 $s = 72$

$A = \sqrt{72(72-44)(72-47)(72-53)}$

$A \approx 978.57 \text{ units}^2$