

More Trig – Solving Equations

Notes Section 10.1

Name _____

Solve each equation showing all your work. Round angles to the nearest tenth and segments to the nearest hundredth

#1) $b^2 = a^2 + c^2 - 2ac \cos(m\angle B)$
 $15^2 = 10^2 + 6^2 - 2(10)(6) \cos(m\angle B)$

$$225 = 100 + 36 - 120 \cos(m\angle B)$$

$$225 = 136 - 120 \cos(m\angle B)$$

$$89 = -120 \cos(m\angle B)$$

$$\frac{89}{-120} = \cos(m\angle B)$$

$$\cos^{-1}\left(\frac{89}{-120}\right) = m\angle B$$

$$137.9^\circ \approx m\angle B$$

#2) $a^2 = b^2 + c^2 - 2bc \cos(m\angle A)$
 $a^2 = 6^2 + 4^2 - 2(6)(4) \cos(20^\circ)$

$$a^2 = 36 + 16 - 48 \cos(20^\circ)$$

$$a^2 = 52 - 48 \cos(20^\circ)$$

$$a = \pm \sqrt{52 - 48 \cos(20^\circ)}$$

$$a \approx 2.63$$

#3) $c^2 = a^2 + b^2 - 2ab \cos(m\angle C)$
 $5^2 = 3^2 + 4^2 - 2(3)(4) \cos(m\angle C)$

$$25 = 9 + 16 - 24 \cos(m\angle C)$$

$$25 = 25 - 24 \cos(m\angle C)$$

$$0 = -24 \cos(m\angle C)$$

$$0 = \cos(m\angle C)$$

$$\cos^{-1}(0) = m\angle C$$

$$90^\circ = m\angle C$$

#4) $b^2 = a^2 + c^2 - 2ac \cos(m\angle B)$
 $b^2 = 3^2 + 8^2 - 2(3)(8) \cos(40^\circ)$

$$b^2 = 9 + 64 - 48 \cos(40^\circ)$$

$$b^2 = 73 - 48 \cos(40^\circ)$$

$$b = \pm \sqrt{73 - 48 \cos(40^\circ)}$$

$$b \approx 6.02$$

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