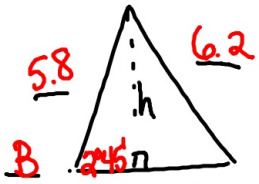
Spiral Review

Solve the triangle.

B= 2°45', b = 6.2, c = 5.8



$5.8 \sin 2°45' = h$

$h = .28$

① $\frac{6.2}{\sin 2°45'} = \frac{5.8}{\sin C}$

$m\angle C = 2°34'21''$

② $180 - 2°45' - 2°34'21''$

$m\angle A = 174°40'39''$

③ $\frac{6.2}{\sin 2°45'} = \frac{a}{\sin 174°40'39''}$

$a = 11.99$

Practice: Unit Circle

Find the exact value.

1.) $\tan\pi$

$(-1, 0)$

$\frac{0}{-1} = 0$

2.) $\cos\left(-\frac{2\pi}{3}\right)$

$\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

$-\frac{1}{2}$

3.) $\sin\frac{11\pi}{6}$

$\left(+\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

$-\frac{1}{2}$

4.) $\sec\frac{5\pi}{6}$

$\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$\frac{-2}{\sqrt{2}}\frac{\sqrt{3}}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$

5.) $\cot(-3\pi)$

$(-1, 0)$

$-\frac{1}{0} = \text{Und.}$

6.) $\csc\frac{8\pi}{3}$

$\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

$\frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} \left(-\frac{2\sqrt{3}}{3}\right)$

p. 4.13 6.2 Law of Cosines

Use the Law of Cosines to solve an oblique triangle- no right angles (SAS, SSS)

To find a side:

$a^2 = b^2 + c^2 - 2bc \cos A$

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

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

To find an angle:

$\cos A = \frac{b^2+c^2-a^2}{2bc}$

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

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

Students will be able to use the Law of COsines to solve the triangle.

Example 1: Use the Law of Cosines to solve the triangle.

a.) c = 12 cm, b = 18 cm, a = 8 cm

1. Find the largest angle.

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

$\cos B = \frac{8^2+12^2-18^2}{2(8)(12)}$

2nd cos ((8²+12²-18²)÷(2·8·12))

$m\angle B = 127.17°$

2. Find the middle angle.

$\frac{18}{\sin 127.17} = \frac{12}{\sin C}$

2nd sin (12 sin (127.17) ÷ 18)

$m\angle C = 32.09°$

3. Find the 3rd angle.

180-127.17-32.09

$m\angle A = 20.74°$

Students will be able to use the Law of Cosines to solve the triangle.

b.) $a = 9, b = 3, c = 11$

① $\cos C = \frac{9^2+3^2-11^2}{2 \cdot 9 \cdot 3}$

2nd cos $((9^2+3^2-11^2) \div (2 \cdot 9 \cdot 3))$

$m\angle C = 125.03°$

② $\frac{11}{\sin 125.03} = \frac{9}{\sin A}$

2nd sin $(9 \sin(125.03) \div 11)$

$m\angle A = 42.06°$

③ $180 - 125.03 - 42.06$

$m\angle B = 12.91°$

Students will be able to use the Law of Cosines to solve the triangle.

c.) $A = 48°, b = 3, c = 14$

1. Find the 3rd side.

$a^2 = b^2 + c^2 - 2bc\cos A$

$= \sqrt{3^2+14^2-2 \cdot 3 \cdot 14 \cos 48}$

$a = 12.20$

2. Find the smallest angle.

$\frac{12.20}{\sin 48} = \frac{3}{\sin B}$

2nd sin $(3 \sin(48) \div 12.20)$

$m\angle B = 10.53°$

3. Find the 3rd angle.

$180 - 48 - 10.53$

$m\angle C = 121.47°$

Students will be able to use the Law of Cosines to solve the triangle.

d.) $B = 10°35'$, $a = 40$, $c = 30$

① $b^2 = \sqrt{40^2 + 30^2 - 2 \cdot 40 \cdot 30 \cos 10°35'}$

$b = 11.87$

② $\frac{11.87}{\sin 10°35'} = \frac{30}{\sin C}$

$m\angle C = 27°39'29''$

③ $180 - 10°35' - 27°39'29''$

$m\angle A = 141°45'31''$

Turn-in:

p.417 (10, 16)

HW:

p.417 (7-21, 31-37 odds)