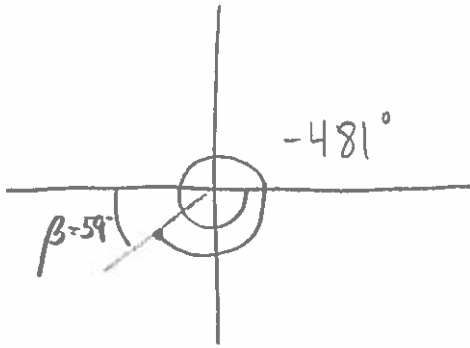STATION 1

a) Sketch the angle -481°.

For this angle, state:

b) the principal angle, θ.
c) the related acute angle, β.
d) the quadrant it terminates in.
e) which primary trig ratio of θ will be
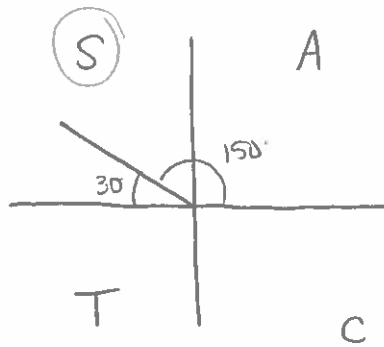   positive.

1.

a) $\theta = 239°$

$(180° + 59°)$

b) $\beta = 59°$

c) Q3
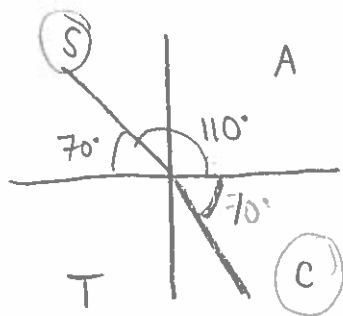
d) Tan

Fill in the blanks:

a) $\sin 150° = \sin$ _____

b) $\tan 110° = \tan$ _____

c) $\sec 200° = \sec$ _____

2. a) $\sin 150° = \sin \underline{\ 30°\ }$

b) $\tan 110° = \tan \underline{\ 290°\ }$

c) $\sec 200° = \sec \underline{\ 160°\ }$
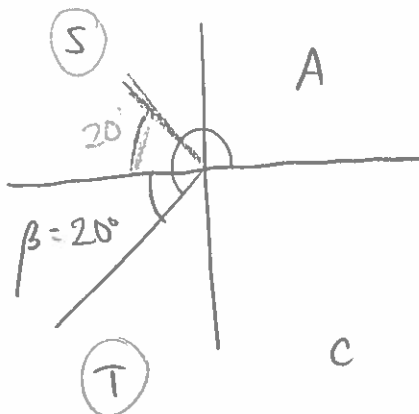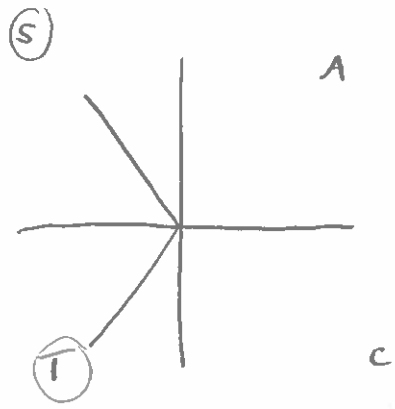
Given $\cos \theta = -\dfrac{5}{9}$

a) sketch the possible angles for θ.

Determine

b) a reciprocal trig ratio for θ

c) $\cos \beta$
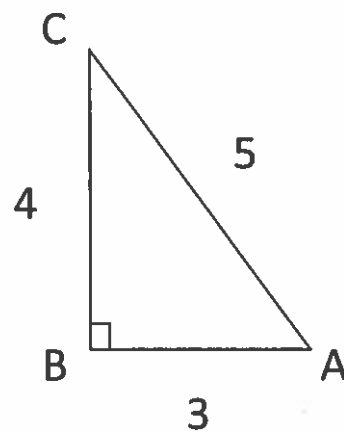
3a) $\cos\theta = -\dfrac{5}{9}$ $\dfrac{A}{H}$

b) since $\cos\theta = -\dfrac{5}{9}$, $\boxed{\sec\theta = -\dfrac{9}{5}}$

c) $\cos\beta = \dfrac{5}{9}$

STATION 4

Given ΔABC, determine

a) csc C

b) cos A

c) cot C

4a)
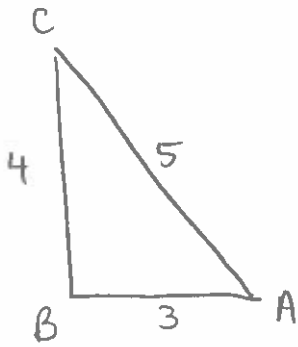
$\csc C = \dfrac{H}{O}$

$\boxed{\csc C = \dfrac{5}{3}}$

b) $\boxed{\cos A = \dfrac{3}{5}}$

c) $\cot C = \dfrac{A}{O}$

$\boxed{\cot C = \dfrac{4}{3}}$

STATION 5

Given the point (4, -2) on the terminal arm of an angle θ in standard position

a) Sketch and label the principal angle.

b) Determine, **exactly**, the 6 trigonometric ratios for θ.

c) Determine the value of the principal angle.

5a)

S   A

θ

(4, -2)
c

T

4

β
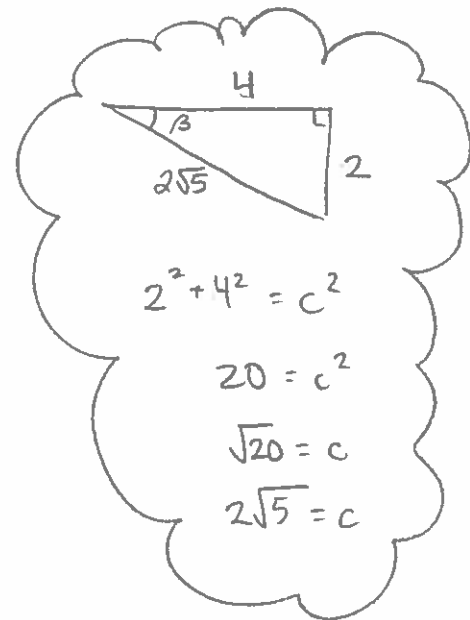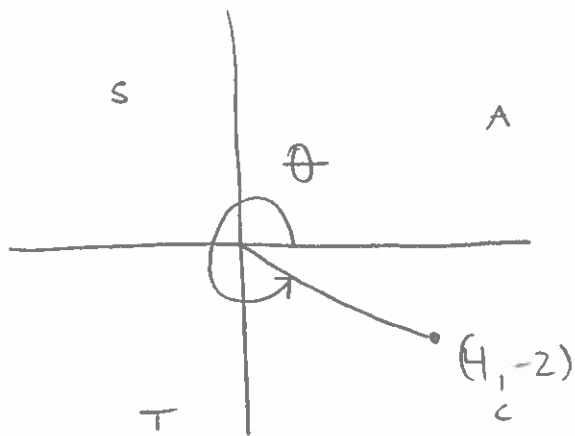
$2\sqrt{5}$ 2

$2^2 + 4^2 = c^2$

$20 = c^2$

$\sqrt{20} = c$

$2\sqrt{5} = c$

b)

$\sin\theta = -\dfrac{2}{2\sqrt{5}} \cdot \dfrac{\sqrt{5}}{\sqrt{5}}$

$\boxed{\sin\theta = -\dfrac{\sqrt{5}}{5}}$

$\csc\theta = \dfrac{-2\sqrt{5}}{2}$

$\boxed{\csc\theta = -\sqrt{5}}$

$\cos\theta = \dfrac{4}{2\sqrt{5}} \cdot \dfrac{\sqrt{5}}{\sqrt{5}}$

$\boxed{\cos\theta = \dfrac{2\sqrt{5}}{5}}$

$\sec\theta = \dfrac{2\sqrt{5}}{4}$

$\boxed{\sec\theta = \dfrac{\sqrt{5}}{2}}$

$\tan\theta = -\dfrac{2}{4}$

$\boxed{\tan\theta = -\dfrac{1}{2}}$

$\cot\theta = -\dfrac{4}{2}$

$\boxed{\cot\theta = -2}$

c) $\tan\theta = -\dfrac{1}{2}$

$\theta = \tan^{-1}\left(\dfrac{1}{2}\right)$

$\theta = 27°$

$\uparrow$

This is β !

$\boxed{\therefore \theta \text{ is } 333°}$

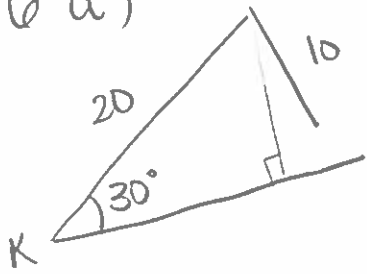STATION 6

Given each set of information, determine how many triangles there are. **DO NOT SOLVE.**

a) $\triangle$JKL if $\angle$K = 30°, k = 10 cm, j = 20 cm

b) $\triangle$STU if $\angle$U = 155°, u = 7 m, s = 12 m

6 a)

① b/c 10 < 20 , check h

$$\sin 30° = \frac{h}{20}$$

$$h = 10$$

② b/c h = a , there is 1 triangle.
     10 = 10

b)
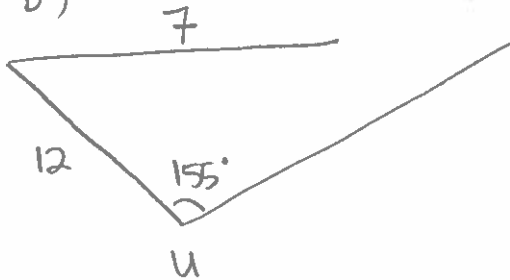
b/c 7 < 12 ,

there is no triangle.

STATION 7

Determine θ if $0° \leq \theta \leq 360°$ for the following equations.

a) $\sqrt{2} \sin \theta = -1$

b) $4 \tan \theta - 4\sqrt{3} = 0$

7a) $\sqrt{2} \sin \theta = -1$ The negative means it is in Q3 or Q4.

$\sin \theta = \dfrac{-1}{\sqrt{2}}$
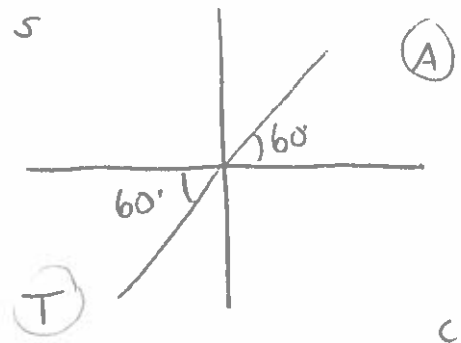
$\theta = 45°$
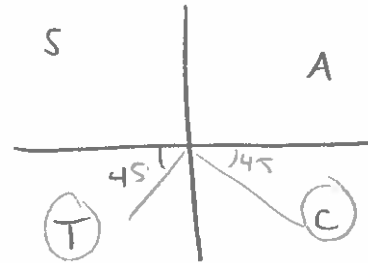
$\theta_1 = 315°$

$\theta_2 = 225°$

b) $4 \tan \theta - 4\sqrt{3} = 0$

$4 \tan \theta = 4\sqrt{3}$

$\tan \theta = \dfrac{4\sqrt{3}}{4}$

$\tan \theta = \dfrac{\sqrt{3}}{1}$

$\theta = 60°$, in Q2 or Q3

$\theta_1 = 60°$

$\theta_2 = 240°$

STATION 8

Determine the exact value of

$$(\sin 210°)(\tan 120°) - 2\cos^2 315°$$

8. $(\sin 210°)(\tan 120°) - 2\cos^2 315°$

$= \left(-\dfrac{1}{2}\right)\left(-\dfrac{\sqrt{3}}{1}\right) - 2\left(\dfrac{1}{\sqrt{2}}\right)^2$

$= \left(\dfrac{\sqrt{3}}{2}\right) - 2\left(\dfrac{1}{2}\right)$

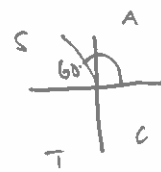$= \dfrac{\sqrt{3}}{2} - \dfrac{2}{2}$

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

recall

① $\sin 210° = -\sin 30$

$\sin 210° = -\dfrac{1}{2}$

② $\tan 120° = -\tan 60°$

$\tan 120 = -\dfrac{\sqrt{3}}{1}$

③ $\cos 315° = \cos 45$
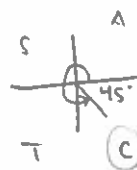
$\cos 315 = \dfrac{1}{\sqrt{2}}$

STATION 9

Sally and Jane are going to run around a play structure. They part with an angle θ between them. Sally runs 130 m/h while Jane runs 150 m/h. After 5 minutes, they reach opposite sides of the play structure. Sally notices her friend Robin at the top of the play structure. Sally notices that the angle of elevation to Robin is 60° and that the play structure is 10 m tall. Jane realizes Robin is at an angle of elevation of 50° for her. What angle did they part at when they started their run?

9.

Robin
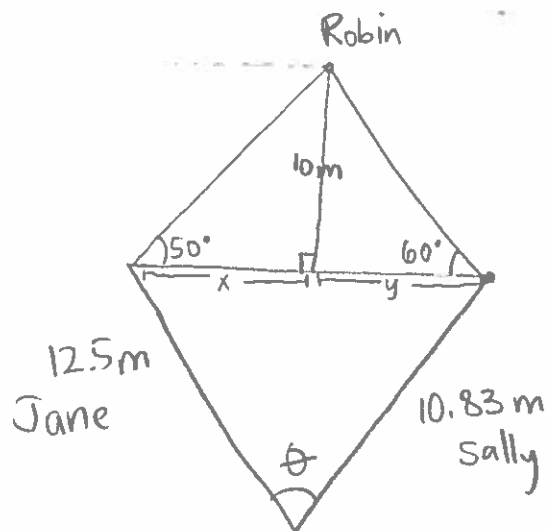
Sally $\dfrac{130m}{x} = \dfrac{60\ min}{5\ min}$

$x = 10.83\ m$

Jane $\dfrac{150\ m}{x} = \dfrac{60\ min}{5\ min}$

$x = 12.5\ m$

① $\tan 50° = \dfrac{10}{x}$

$x = 8.39$

② $\tan 60° = \dfrac{10}{y}$

$y = 5.77$

③ $5.77 + 8.39 = 14.16\ m$

④ $c^2 = a^2 + b^2 - 2ab\cos C$

$(14.16)^2 = (12.5)^2 + (10.83)^2 - 2(12.5)(10.83)\cos C$

$\boxed{\angle C = 74°}$

STATION 1

a) Sketch the angle -481°.

For this angle, state:

b) the principal angle, θ.
c) the related acute angle, β.
d) the quadrant it terminates in.
e) which primary trig ratio of θ will be positive.

STATION 2

Fill in the blanks:

a) sin 150° = sin _____

b) tan 110° = tan _____

c) sec 200° = sec _____

STATION 3

$$\text{Given } \cos \theta = -\frac{5}{9}$$

a) sketch the possible angles for θ.

Determine

b) a reciprocal trig ratio for θ

c) $\cos \beta$

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Given ΔABC, determine

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Answers for STATIONS

Station	Answers					CHECKED
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2	a)		b)		c)	
3	a)		b)		c)	
4	a)		b)		c)	
5	a)		b)		c)	
6	a)			b)		
7	a)			b)		
8						
9						

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8						
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