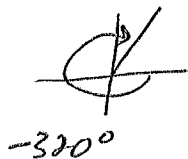


SOLUTION Practice Exam I

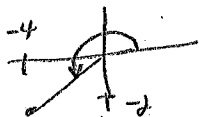
pg 1re

① ①. A



②. B $\cot(\theta)$ & $\tan(\theta)$ always have same signum

③ B

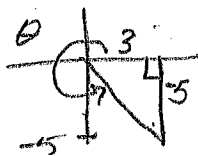


④. C $\frac{S}{C} \Rightarrow QIII$

⑤. A see definitions

⑥. E $\sin(\theta)$ is positive in $\frac{S}{T} \Rightarrow QI \neq QII$

⑦. E



$$\begin{aligned} \Rightarrow x=3 \\ y=-5 \\ r^2 &= (3)^2 + (-5)^2 \\ &= 9 + 25 \Rightarrow r = \sqrt{9+25} \\ &= \sqrt{34} \end{aligned}$$

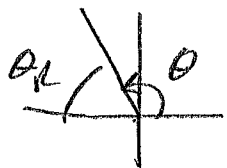
$$\text{so } \sin(\theta) = \frac{y}{r} = \frac{-5}{\sqrt{34}}$$

⑧ D

$$\begin{aligned} 5 \sin(\theta) - 10 &= -13 \Rightarrow 5 \sin(\theta) = -3 \\ +10 \quad +10 &\Rightarrow \sin(\theta) = -3/5 \end{aligned}$$

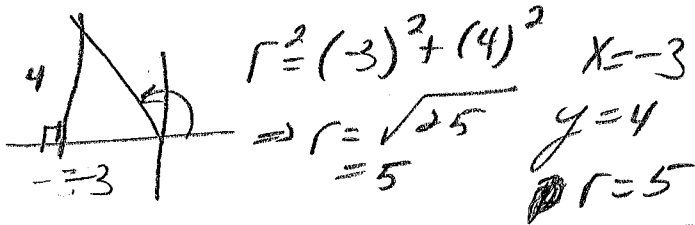
$\sin(\theta)$ is negative $\Rightarrow QIII \text{ } QIV$

⑨ D



$$\begin{aligned} \theta_R &= 180 - 100 \\ &= \theta_L = 80 \end{aligned}$$

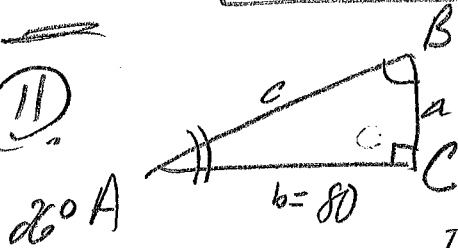
10



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SO $\left[\sin(\theta) = \frac{4}{5} \quad \cos(\theta) = \frac{-3}{5} \quad \tan(\theta) = \frac{4}{-3} \right]$

11



Find

$\angle B = 64^\circ$
$a = 39.0$
$c = 89.0$

$\angle B = 90 - 26 = \boxed{64^\circ}$

$\underline{a} = \tan(26^\circ) = \frac{a}{80}$

$\Rightarrow a = \tan(26^\circ)(80)$

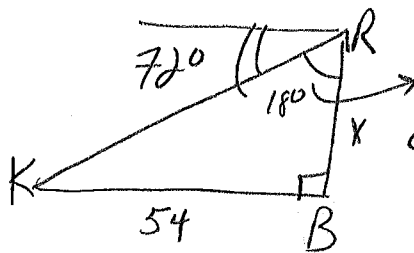
$= \boxed{39.0}$

$\underline{c} = \cos(26^\circ) = \frac{80}{c}$

$\Rightarrow c \cos(26^\circ) = 80$

$\Rightarrow c = \frac{80}{\cos(26^\circ)} = \boxed{89.0}$

12



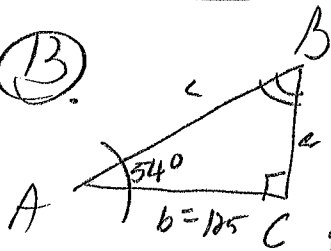
$90 - 72 = 18^\circ$

$\hookrightarrow \tan(18^\circ) = \frac{54}{x}$

$\Rightarrow x \cdot \tan(18^\circ) = 54$

$\Rightarrow x = \frac{54}{\tan(18^\circ)} = \boxed{16.2}$

13



Find:

$\angle B = 36^\circ$
$a = 172.0$
$c = 212.7$

$\angle B$:

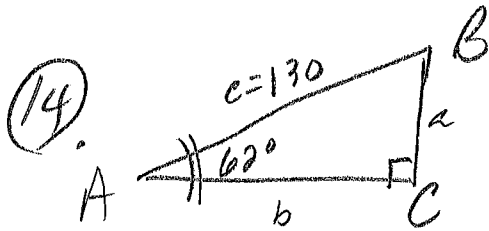
$\angle B = 90 - 54 = 36^\circ$

$\underline{a} = \tan(54^\circ) = \frac{a}{125} \Rightarrow a = 125 \tan(54^\circ)$

$= \boxed{172.0}$

$\underline{c} = \cos(54^\circ) = \frac{125}{c}$

$\Rightarrow c = \frac{125}{\cos(54^\circ)} = 212.7$



Find:

$$\begin{aligned} \angle B &= 28^\circ \\ a &= 114.8 \\ b &= 61.0 \end{aligned}$$

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AB: $\angle B = 90 - 62^\circ$
 $= \boxed{28^\circ}$

a: $\sin(62^\circ) = \frac{a}{130}$
 $\Rightarrow a = 130 \sin(62^\circ)$
 $= \boxed{114.8}$

b: $\cos(62^\circ) = \frac{b}{130}$
 $\Rightarrow b = 130 \cos(62^\circ)$
 $= 61.0$

(15) $5 \sin(\theta) - 10 = -13$
 $+10 \quad +10$

* Isolate

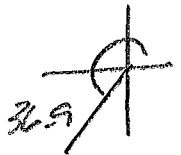
$\Rightarrow 5 \sin(\theta) = -3$

$\Rightarrow \sin(\theta) = \frac{-3}{5}$

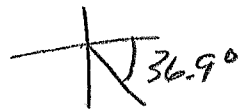
* Quadrant Check $\frac{S}{+} \mid \frac{A}{-}$
 QIII QIV

* Ref $\angle$:
 $\theta_R = \sin^{-1}(\frac{3}{5})$
 $= 36.9^\circ$

* solve



$\theta = 180^\circ + 36.9^\circ$
 $= \boxed{216.9^\circ}$



$\theta = 360^\circ - 36.9^\circ$
 $= \boxed{323.1^\circ}$

(16) $\cos(\theta) = -\frac{1}{2}$

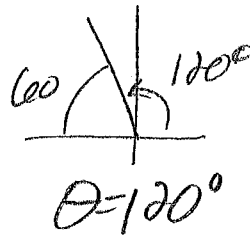
* Isolate ✓

* Quadrant Check $\frac{S}{+} \mid \frac{A}{-}$

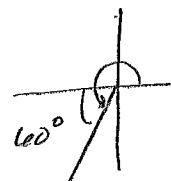
QII QIII

* Ref $\angle$
 $\theta_R = 60^\circ$ (special angle)

* solve



$\theta = 120^\circ$



$\theta = 180^\circ + 60^\circ$
 $= 240^\circ$

$\theta = 120^\circ \quad \theta = 240^\circ$

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#17 $\csc(\theta) = \frac{2}{\sqrt{2}}$

⊗ Isolate

⊗ Reciprocal

$\Rightarrow \sin(\theta) = \frac{\sqrt{2}}{2}$

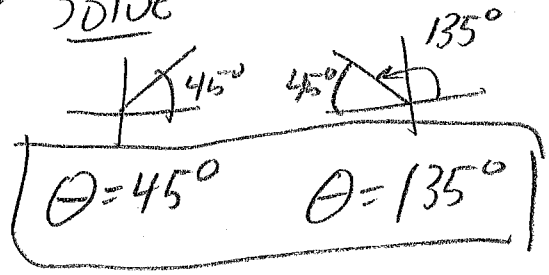
⊗ Quadrant Check $\frac{S}{T} \mid \frac{A}{C}$

QI QII

⊗ Reference Angle

$\theta_R = 45^\circ$ (special angle)

⊗ Solve



#18

$2 \tan(\theta) + 6 = 22$

⊗ Isolate

$\Rightarrow \frac{2 \tan(\theta)}{2} = \frac{16}{2}$

$\Rightarrow \tan(\theta) = 8$

⊗ Quadrant Check $\frac{S}{T} \mid \frac{A}{C}$

Tangent is positive

QI QIII

⊗ Reference Angle

$\tan^{-1}(\tan(\theta_R)) = \tan^{-1}(8)$

$\Rightarrow \theta_R = \tan^{-1}(8)$
 $= 82.9^\circ$

⊗ Solve

