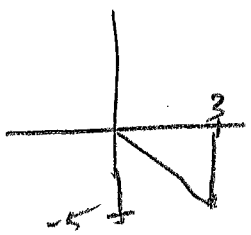
Solutions Practice EXAM I pg 1 n-e

I

1. C
2. B
3. E (IT IS $180+50=230°$)
4. C
5. B
6. E (It is QI & QII)
7. E
8. D
9. D

sorry for the repeat.

#7



$x=3$

$y=-5$

$r=\sqrt{(3)^2+(-5)^2}$

$=\sqrt{34}$

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

#8 $5\sin(\theta)-10=-13$

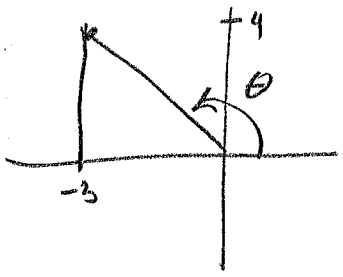
$\Rightarrow 5\sin(\theta)=-3$

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

(*) Quad check

$\Rightarrow$ QIII QIIII

10.



$x=-3$

$y=4$

$r=\sqrt{(-3)^2+(4)^2}$

$=\sqrt{9+16}$

$=\sqrt{25}$

$=5$

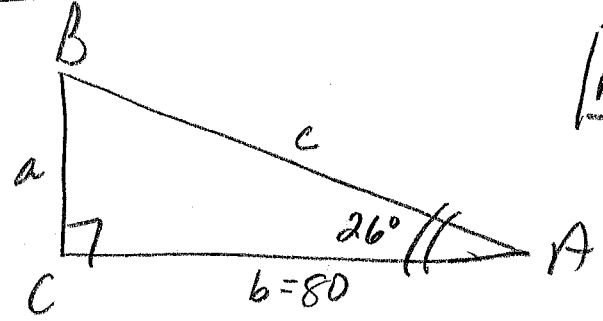
50

$\sin(\theta)=\frac{y}{r}=\frac{4}{5}$

$\cos(\theta)=\frac{x}{r}=\frac{-3}{5}$

$\tan(\theta)=\frac{y}{r}=\frac{4}{-3}$

11.



Find c: 89

Choose

$\cos(26°)=\frac{80}{c}$

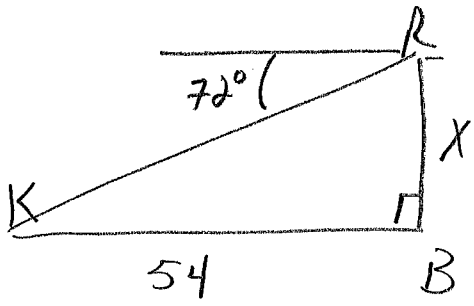
$\Rightarrow c\cdot\cos(26°)=80$

$\Rightarrow c=\frac{80}{\cos(26°)}$

$=89.08815\ldots$

$\Rightarrow \boxed{c\approx 89}$

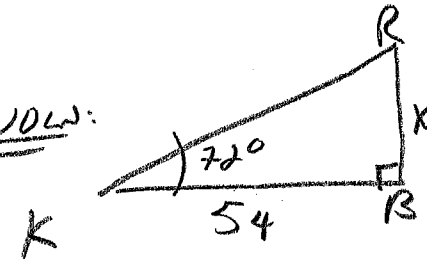
(12)



Find x: 54

we need an angle in the Δ. since ∠ of elevation equals ∠ of depression we have:

$\angle K = 72°$



SO NOW: ⇒ choose: $\tan(72°) = \frac{x}{54}$

cross-multiply:

$x = (54) \cdot \tan(72°)$

$= 166.1949\ldots$

$\Rightarrow$ **$x \approx 166.19$ ft**

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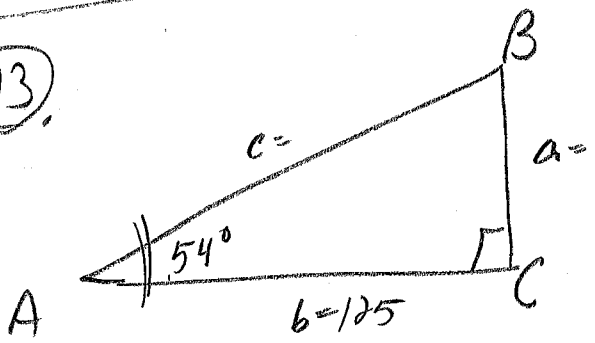
(13)



Find **$\angle B = 36°$**, **$a = 172.0$**, **$c = 212.7$**

$\angle B$: $\angle B = 90 - 54$

$= \boxed{36°}$

a: $\tan(54°) = \frac{a}{125}$

$\Rightarrow a = (125) \cdot \tan(54°)$

$= 172.047\,74\ldots$

≈ 172.0

c: $\cos(54°) = \frac{125}{c}$

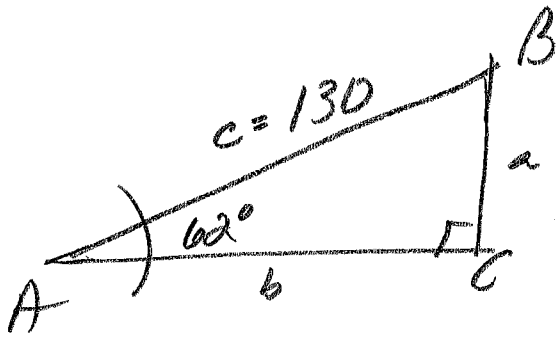
$\Rightarrow c \cdot \cos(54°) = 125$

$\Rightarrow c = \frac{125}{\cos(54°)}$

$= 212.66276\ldots$

≈ 212.7

(14.)



Find:

$\angle B = 28°$

$a = 114.8$

$b = 61.0$

$\angle B$:

$\angle B = 90 - 62$

$= 28°$

a: $\sin(62°) = \frac{a}{130}$

$\Rightarrow a = 130 \cdot \sin(62°)$

$= 114.78318...$

≈ 114.8

b: $\cos(62°) = \frac{b}{130}$

$\Rightarrow b = 130 \cdot \cos(62°)$

$= 61.03130...$

≈ 61.0

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

* Isolate:

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

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

* Quad. check:

QIII QIIII

* Ref $\angle$:

Not a special angle so

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

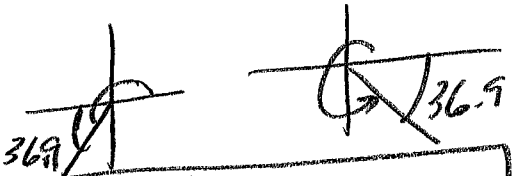
$\Rightarrow \theta_R = \sin^{-1}(\frac{3}{5})$

$= 36.8698...$

$\approx 36.9°$

* Solve:

QIII $\theta =$ QIII



$\theta = 216.9°$ $\theta = 323.1°$

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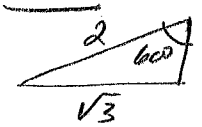
(16) $\cos(\theta) = -\frac{1}{2}$

* Isolate done

* Quad. check

QII QIII

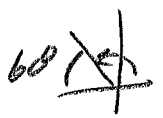
* Ref $\angle$:



$\theta_R = 60°$

* solve

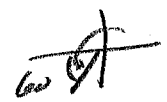
QII



$\theta = 180 - 60$

$\Rightarrow \theta = 120°$

QIII



$\theta = 180 + 60$

$\theta = 240°$

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

* Isolate done

RECIPROCAL

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

same as

$\sin(\theta) = \frac{1}{\sqrt{2}}$

* Quad. check

QI QII

* Ref $\angle$:

$\theta_R = 45°$

* solve

QI

$\theta = 45°$

QII:

$\theta = 180 - 45$

$\Rightarrow \theta = 135°$

pg 4 hw

(18) $2\tan(\theta) + 6 = 22$
$-6 \quad -6$

① Isolate:

$\Rightarrow 2\tan(\theta) = 16$

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

② Quad. check

QI QIII

③ Ref ∠:

NOT a special angle so

$\tan(\theta) = 8$

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

$= 82.8749...$

$= 82.9°$

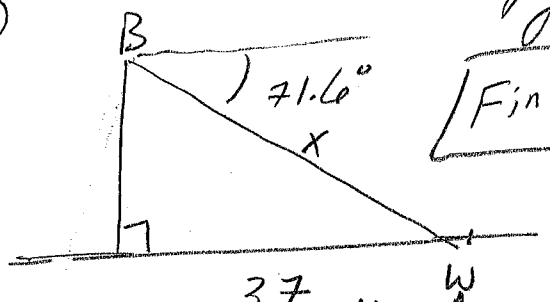
④ Solve:

QI $\boxed{\theta = 82.9°}$

QIII $\theta = 180 + 82.9$

$\Rightarrow \boxed{\theta = 262.9°}$

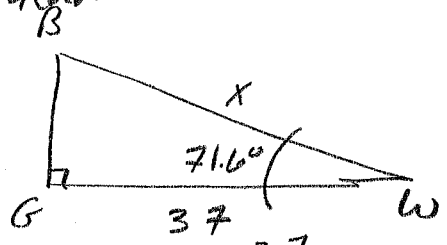
(19)



Find X: ft

Need an angle in the Δ. since ∠ of elevation = ∠ of depression we have ∠W = 71.6°

so



$\Rightarrow \cos(71.6°) = \frac{37}{X}$

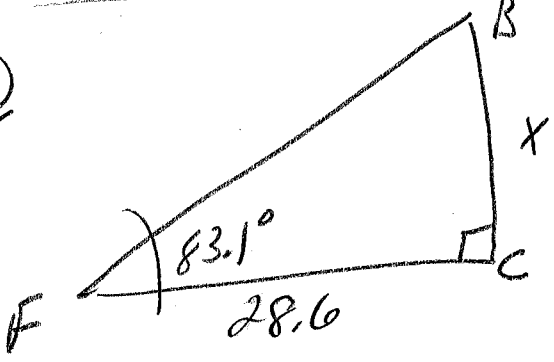
$\Rightarrow X \cdot \cos(71.6) = 37$

$\Rightarrow X = \frac{37}{\cos(71.6°)}$

$= 117.2187...$

$\Rightarrow \boxed{X \approx 117.2 \text{ ft}}$

(20)



Find X: ft

$\tan(83.1) = \frac{X}{28.6}$

$\Rightarrow X = 28.6 \cdot \tan(83.1°)$

$\Rightarrow X = 236.33766...$

$\Rightarrow \boxed{X \approx 236.3 \text{ ft}}$