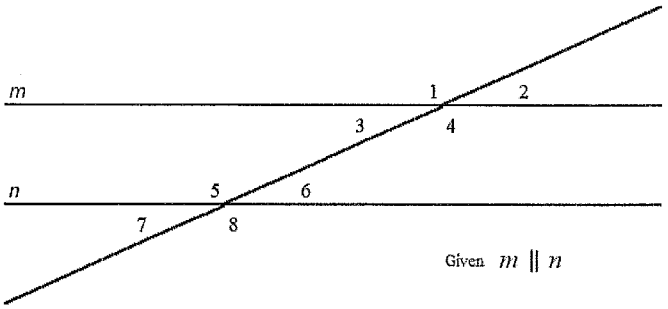
I. MULTIPLE CHOICE: WRITE YOUR RESPONSE IN THE SPACE PROVIDED ON THE QUIZ.
*** * * USE ONLY CAPITAL LETTERS. * * ***

FOR ITEMS #1 – #4 USE THE GIVEN PICTURE. ASSUME LINES m AND n ARE PARALLEL.



1. _____ WHICH ANGLE IS ALTERNATE INTERIOR TO $\measuredangle 3$?
   A. $\measuredangle 2$ B. $\measuredangle 4$ C. $\measuredangle 6$ D. $\measuredangle 8$ E. NONE OF THESE

2. _____ WHICH ANGLE HAS A MEASURE EQUAL TO $\measuredangle 7$?
   A. ALL OF B, C, AND D ARE CORRECT B. $\measuredangle 2$ C. $\measuredangle 3$ D. $\measuredangle 6$ E. NONE OF THESE

3. _____ WHICH OF THESE STATEMENTS IS TRUE?
   A. $\measuredangle 2$ AND $\measuredangle 4$ ARE VERTICAL ANGLES B. $\measuredangle 5$ AND $\measuredangle 6$ ARE EQUAL ANGLES
   C. $\measuredangle 3$ AND $\measuredangle 5$ ARE ALTERNATE INTERIOR ANGLES
   D. $\measuredangle 7$ AND $\measuredangle 8$ ARE COMPLEMENTARY ANGLES E. NONE OF THESE

4. _____ IF THE MEASURE OF $\measuredangle 1 = 130°$ WHAT IS THE MEASURE OF $\measuredangle 7$?
   A. $130°$ B. $50°$ C. $180°$ D. NOT ENOUGH INFORMATION IS GIVEN E. NONE OF THESE

* * * *

5. _____ GIVEN θ LIES IN QII AND $\sin(\theta) = -\frac{3}{7}$ WHICH OF THESE **MUST** BE TRUE?

   A. ALL OF B, C, AND D ARE TRUE B. $\csc(\theta) = -\frac{7}{3}$ C. $\tan(\theta)$ IS A POSITIVE VALUE

   D. $\cos(\theta) = \frac{3}{7}$ E. NONE OF THESE

6. _____ GIVEN $\tan(\theta) > 0$ AND $\cos(\theta) < 0$, IN WHICH QUADRANT DOES θ LIE?
   A. QI B. QII C. QIII D. QIIII E. NONE OF THESE

7. _____ GIVEN $\cos(\theta) < 0$ AND $\sin(\theta) < 0$, IN WHICH QUADRANT DOES θ LIE?
   A. QI B. QII C. QIII D. QIIII E. NONE OF THESE

8. _____ GIVEN $\sec(\theta) > 0$ AND $\tan(\theta) < 0$, IN WHICH QUADRANT DOES θ LIE?
   A. QI B. QII C. QIII D. QIIII E. NONE OF THESE

9. _____ GIVEN $\cot(\theta) < 0$ AND $\csc(\theta) < 0$, IN WHICH QUADRANT DOES θ LIE?
   A. QI B. QII C. QIII D. QIIII E. NONE OF THESE

10. _____ WHICH OF THE FOLLOWING CONTAINS **NO ERRORS**?

A. $\sec(\theta)=\frac{x}{r}$ AND $\tan(\theta)=\frac{y}{x}$ B. $\cos(\theta)=\frac{y}{r}$ AND $\tan(\theta)=\frac{y}{x}$

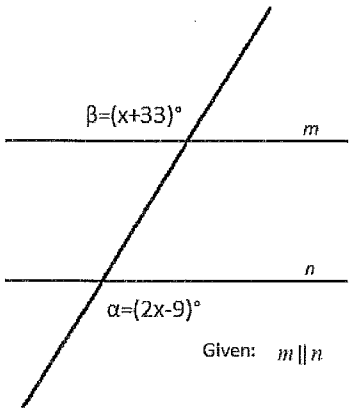
C. $\sec(\theta)=\frac{r}{x}$ AND $\cot(\theta)=\frac{x}{y}$ D. $\sin(\theta)=\frac{x}{r}$ AND $\csc(\theta)=\frac{r}{x}$ E. NONE OF THESE

* * * *

II. FOR EACH GIVEN FIGURE DETERMINE THE MEASURES **IN DEGREES** OF THE ANGLES YOU ARE BEING ASKED TO FIND. NOTE THAT FOR ITEM #11 PARALLEL LINES ARE GIVEN AS INDICATED.
SYMBOLS: α REPRESENTS "alpha" β REPRESENTS "beta" γ REPRESENTS "gamma"

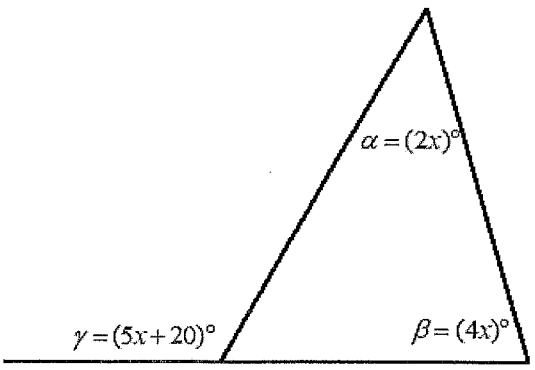
11. FIND THE MEASURES OF ANGLES α AND β.

α = _____ β = _____



12. FIND THE MEASURES OF ANGLES α, β, AND γ.

α = _____ β = _____ γ = _____



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III. USE THE GIVEN INFORMATION TO DETERMINE THE VALUES OF THE INDICATED TRIG FUNCTIONS. SHOW ALL WORK YOU WANT CONSIDERED FOR CREDIT IN THE SPACE PROVIDED. IF YOU DO NOT SHOW YOUR WORK IN A NEAT AND ORDERLY FASHION, YOU FORFEIT YOUR CLAIM TO ANY CREDIT.

13. GIVEN: θ IS AN ANGLE IN STANDARD POSITON AND THE TERMINAL SIDE OF θ PASSES THROUGH THE POINT $P(2,-5)$.

$\sin(\theta) =$_____ $\csc(\theta) =$_____

$\cos(\theta) =$_____ $\sec(\theta) =$_____

$\tan(\theta) =$_____ $\cot(\theta) =$_____

14. GIVEN: θ IS AN ANGLE IN STANDARD POSITON AND THE TERMINAL SIDE OF θ PASSES THROUGH THE POINT $P(-\sqrt{7},3)$.

$\sin(\theta) =$_____

$\cos(\theta) =$_____

$\tan(\theta) =$_____

IIII. USE THE $x-y-r$ DEFINITIONS TO VERIFY EACH IDENTITY:

15. $\cos(\theta) = \dfrac{1}{\sec(\theta)}$

16. $\tan(\theta) = \dfrac{\sec(\theta)}{\csc(\theta)}$

17. $\sin(\theta) = \dfrac{\tan(\theta)}{\sec(\theta)}$

Solution Practice for Quiz #1

I

(1) C

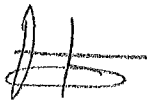
(2) A → ∠2 is alternate exterior; ∠3 is corresponding; ∠6 is vertical

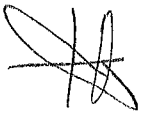
(3) E

(4) B ∠1 & ∠3 are supplementary so $\angle 3 = 180 - \angle 1$
$= 180 - 130 = 50°$
∠3 & ∠3 are corresponding so $\angle 7 = 50°$

(5) B

(6) C ⇒  ⇒ QIII

(7) C ⇒  ⇒ QIII

(8) D ⇒  ⇒ QIIII

(9) D ⇒  ⇒ QIIII

(10) C ⇒ $\sec(\theta) = \frac{r}{x}$ so Not A; $\cos(\theta) = \frac{x}{r}$ so not B
$\sin(\theta) = \frac{y}{r}$ so NOT D

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(11) α & β are alt. exterior so they are equal

$\Rightarrow 2x - 9 = x + 33$
$\quad -x \qquad -x$
$\Rightarrow x - 9 = 33$
$\Rightarrow x = 42°$

$\Rightarrow \alpha = 2x - 9$
$= 2(42) - 9$
$= 84 - 9$
$= \boxed{75°}$

$\beta = x + 33$
$= (42) + 33$
$= \boxed{75°}$

(#12). the exterior angle equals the sum of the remote interior.

$\Rightarrow \gamma = \alpha + \beta$

$\Rightarrow 5x + 20 = 2x + 4x$

$\Rightarrow 5x + 20 = 6x$

$-5x \quad -5x$

$\Rightarrow 20 = x$

so $\alpha = 2x$

$= 2(20)$

$= \boxed{40^\circ}$

$\beta = 4x$

$= 4(20)$

$= \boxed{80^\circ}$

$\gamma = 5x + 20$

$= 5(20) + 20$

$= 100 + 20$

$= \boxed{120^\circ}$

check

$\alpha + \beta = 40 + 80$

$= 120$

$= \gamma$ ←

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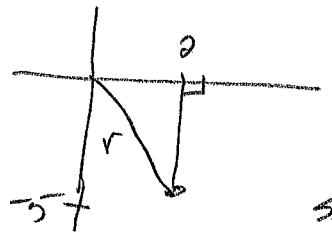
(13). given: $P = (2, -5)$

$\Rightarrow$



$r = \sqrt{x^2 + y^2}$

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

$= \sqrt{4 + 25}$

$= \sqrt{29}$ ←

so

$x = 2$

$y = -5$

$r = \sqrt{29}$

so we have

$\sin(\theta) = \frac{-5}{\sqrt{29}} \quad \csc(\theta) = \frac{\sqrt{29}}{-5}$

$\cos(\theta) = \frac{2}{\sqrt{29}} \quad \sec(\theta) = \frac{\sqrt{29}}{2}$

$\tan(\theta) = \frac{-5}{2} \quad \cot(\theta) = \frac{2}{-5}$

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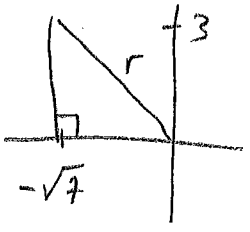
(14). given: $P = (-\sqrt{7}, 3)$

$\Rightarrow$



$r = \sqrt{(-\sqrt{7})^2 + (3)^2}$

$= \sqrt{7 + 9}$

$= \sqrt{16}$

$= 4$

so $x = -\sqrt{7}$

$y = 3$

$r = 4$

so we have

$\sin(\theta) = \frac{3}{4}$

$\cos(\theta) = \frac{-\sqrt{7}}{4}$

$\tan(\theta) = \frac{3}{-\sqrt{7}}$

III.

(15) $\frac{1}{\sec(\theta)} = \frac{1}{\frac{r}{x}}$

$= 1 \cdot \frac{x}{r}$

$= \frac{x}{r}$

$= \cos(\theta)$ ←

(16) $\frac{\sec(\theta)}{\csc(\theta)} = \frac{\frac{r}{x}}{\frac{r}{y}}$

$= \frac{r}{x} \cdot \frac{y}{r}$

$= \frac{y}{x}$

$= \tan(\theta)$ ←

(17) $\frac{\tan(\theta)}{\sec(\theta)} = \frac{\frac{y}{x}}{\frac{r}{x}}$

$= \frac{y}{x} \cdot \frac{x}{r}$

$= \frac{y}{r}$

$= \sin(\theta)$ ←