HW #3-11 Solutions

① $m\angle 2 = m\angle 3 = m\angle 20 = m\angle 22 = 156°$

$m\angle 4 = m\angle 5 = m\angle 27 = m\angle 32 = m\angle 19 = m\angle 21 = 24°$

$m\angle 8 = m\angle 7 = m\angle 12 = m\angle 13 = m\angle 24 = m\angle 25 = m\angle 29 = m\angle 30 = 20°$

$m\angle 6 = m\angle 9 = m\angle 16 = m\angle 18 = m\angle 28 = m\angle 31 = 136°$

$m\angle 11 = m\angle 14 = m\angle 23 = m\angle 26 = 160°$

$m\angle 10 = m\angle 15 = m\angle 17 = 44°$

② (a) $\angle 5, \angle 19, \angle 13, \angle 25$

(b) $\angle 15, \angle 29, \angle 13$

(c) $\angle 16, \angle 20, \angle 28$

(d) $\angle 18, \angle 26$

③ False! could be parallel

④

Statements	Reasons
① $\overline{AC} \perp \overline{BC}$ $\angle 3$ comp $\angle 1$	① given
② $\angle ABC$ is a right $\angle$	② def. of $\perp$ lines
③ $m\angle ABC = 90°$	③ def. of a right $\angle$
④ $m\angle 1 + m\angle 2 = m\angle ABC$	④ angle add. post.
⑤ $m\angle 1 + m\angle 2 = 90°$	⑤ substitution prop. $=$
⑥ $\angle 1$ comp $\angle 2$	⑥ def. of comp. $\angle$s
⑦ $\angle 3 \cong \angle 2$	⑦ $\cong$ comps. thm

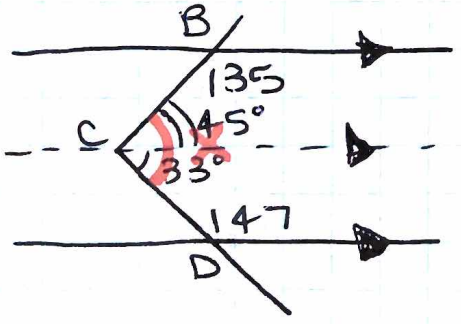
*alternate proof to #4

Statements	Reasons
① - ⑤ same as last pg.	① - ⑤ same as last pg.
⑥ $m\angle 3 + m\angle 1 = 90°$	⑥ def. of comp $\angle$s
⑦ $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 1$	⑦ subst. prop. = (or trans. prop =)
⑧ $m\angle 2 = m\angle 3$	⑧ subtraction prop =
⑨ $\angle 2 \cong \angle 3$	⑨ $= \rightarrow \cong$

⑤

Statements	Reasons
① $m \perp n$, $\angle 3$ comp $\angle 4$	① given
② $\angle ABC$ is a rt. $\angle$	② def. of $\perp$ lines
③ $m\angle ABC = 90°$	③ def. of a right $\angle$
④ $m\angle 3 + m\angle 6 = m\angle ABC$	④ angle add. post.
⑤ $m\angle 3 + m\angle 6 = 90°$	⑤ substitution prop. =
⑥ $\angle 3$ comp $\angle 6$	⑥ def. of comp. $\angle$s
⑦ $\angle 4 \cong \angle 5$	⑦ vert. $\angle$s are $\cong$
⑧ $m\angle 3 + m\angle 4 = 90°$	⑧ def. of comp. $\angle$s
⑨ $m\angle 4 = m\angle 5$	⑨ $\cong \rightarrow =$
⑩ $m\angle 3 + m\angle 5 = 90°$	⑩ substitution prop =
⑪ $\angle 3$ comp $\angle 5$	⑪ def. of comp. $\angle$s
⑫ $\angle 5 \cong \angle 6$	⑫ $\cong$ comps. thm

⑥

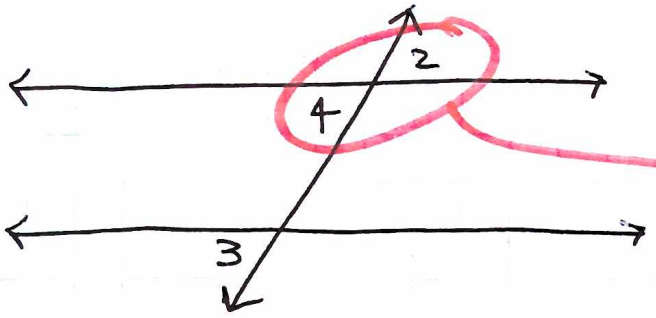


$m\angle BCD = 45 + 33 = \boxed{78°}$

⑦ skew: $\overline{JN}$, $\overline{KL}$, $\overline{JM}$, $\overline{KP}$

// : $\overline{NP}$, $\overline{JK}$, $\overline{ML}$

$\perp$: $\overline{NR}$, $\overline{PQ}$, $\overline{MR}$, $\overline{LQ}$

(8) 

vertical ∠s

(9) $(-2,1)$ and $(-3,-3)$

$$m = \frac{-3-1}{-3+2} = \frac{-4}{-1} = 4$$

$$y-1 = 4(x+2)$$

$$y-1 = 4x+8$$

$$\boxed{y = 4x+9}$$

(10) 4

(11) $-4x+y=9$

$$\boxed{4x-y=-9}$$

(12) (a) $\angle 2 \cong \angle 6$, $\angle 3 \cong \angle 7$

(b) $\angle 7$ supp $\angle 6$, $\angle 2$ supp $\angle 3$

(c) $\angle 4 \cong \angle 8$, $\angle 1 \cong \angle 5$

(d) $\angle 1 \cong \angle 3$, $\angle 2 \cong \angle 4$, $\angle 8 \cong \angle 6$, $\angle 7 \cong \angle 5$

(13) $6x+32 = 116$

$6x = 84$

$\boxed{x = 14}$

$6(14)+32+5y-21 = 180$

$5y+95 = 180$

$5y = 85$

$\boxed{y = 17}$

(14) $5(-11x - 4y) = (36)5$
$-2(-10x - 10y) = (20)2$

$-55x - 20y = 180$
$20x + 20y = -40$

$-35x = 140$

$x = -4$

$-10(-4) - 10y = 20$

$40 - 10y = 20$

$-10y = -20$

$y = 2$

$\boxed{(-4, 2)}$

(15) $b^2 + 2b - 35 = 0$

$(b + 7)(b - 5) = 0$

$b + 7 = 0$ $\quad$ $\boxed{b = -7}$

$b - 5 = 0$ $\quad$ $\boxed{b = 5}$