40/40 = 100

Math 0099
University of North Georgia
Spring 2015
Exam #1

Name: Key Date: _____

1. Find the ***x*** and ***y Intercepts*** and state the ***Domain*** of the following: $6x - 4y = -11$.
Note: Do <u>NOT</u> graph!

x - Intercept

$6x - 4(0) = -11$

$x = -\frac{11}{6}$

$\left(-\frac{11}{6}, 0\right)$

y - Intercept

$6(0) - 4y = -11$

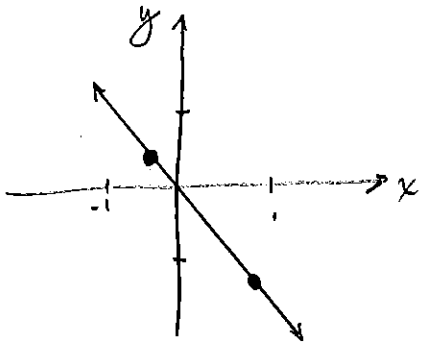
$y = \frac{11}{4}$

$\left(0, \frac{11}{4}\right)$

Domain: $(-\infty, \infty)$

2. Find the slope of line passing through the following two ordered pairs:
$\left(-\frac{2}{5}, \frac{1}{4}\right)$ *and* $\left(\frac{3}{4}, -\frac{9}{7}\right)$.

(1)



negative Slope

(2) $m = \dfrac{\left(-\frac{9}{7}\right) - \left(\frac{1}{4}\right)}{\left(\frac{3}{4}\right) - \left(-\frac{2}{5}\right)}$

$= \dfrac{\frac{-36 - 7}{28}}{\frac{15 + 8}{20}}$

$= \dfrac{-\frac{43}{28}}{\frac{23}{20}}$

$= -\frac{43}{28} \cdot \frac{20^{5}}{23} = \boxed{-\frac{215}{161}}$

3. Use the chart below to place a check mark indicating which sets the item on the left is a member of.

	$\mathbb{N}$	$\mathbb{W}$	$\mathbb{Z}$	$\mathbb{Q}$	$\mathbb{Q}'$	$\mathbb{R}$
5	✓	✓	✓	✓		✓
$-\sqrt{2}$					✓	✓
$\frac{23}{6}$				✓		✓
$-0.\overline{16}$				✓		✓
0		✓	✓	✓		✓

Consider the following two sets:

$\mathcal{A} = \{x \in \mathbb{N} | 4 \leq x < 8\}$

$\mathcal{B} = \{x \in \mathbb{Z} | -3 < x \leq 4\}$

4. Express $\mathcal{A} \cup \mathcal{B}$ using ***Set-Builder*** and ***Interval*** notations.

$\{x \in \mathbb{Z} \mid -3 < x < 8\}$ $\quad (-3, 8)$

5. Determine if the following relation is a function: $\mathcal{D} = \{(-1,-3), (0,0), (2,6), (4,12)\}$. **EXPLAIN.**

$\mathcal{D}$	$\mathcal{R}$
-1	-3
0	0
2	6
4	12

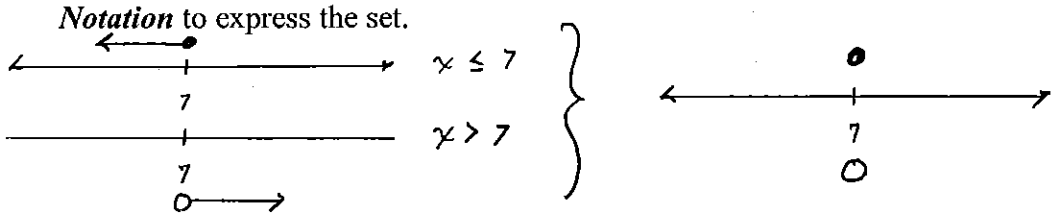
No repeated members of the domain. Relation is a function

6. In question #5 above, if the relation is function, then state the **rule** using "modern" function notation.

$\mathcal{D} \mid x \rightarrow \boxed{3x}$

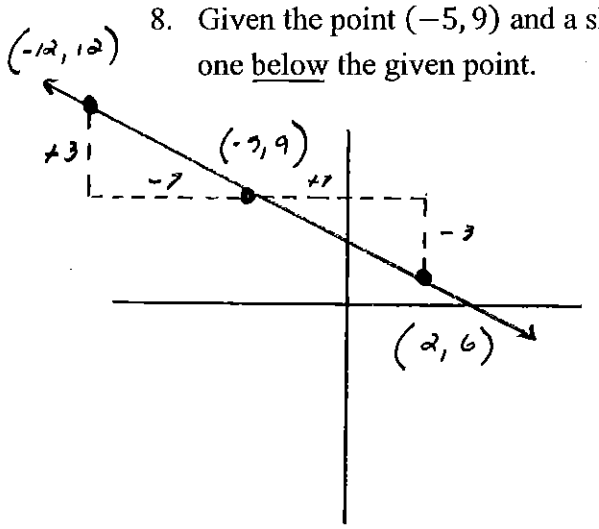
$\boxed{f(x) = 3x}$

7. Consider $\{x \in \mathbb{R} | x \leq 7 or\ x > 7\}$. Graph the set on a real number line and use ***Interval Notation*** to express the set.



$(-\infty, \infty)$

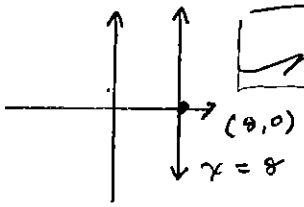
8. Given the point $(-5, 9)$ and a slope $= -\frac{3}{7}$, find a two additional points: one <u>above</u> and one <u>below</u> the given point.



$(-5+7,\ 9-3) = \boxed{(2, 6)}$

$(-5-7,\ 9+3) = \boxed{(-12, 12)}$

9. What is the slope and domain of $x = 8$?



$\boxed{m = \text{Undefined and Domain} = [8] \text{ or } \{8\}}$

10. Given $2x - 3y = -17$, find the equation of the **perpendicular line**, in standard form, which passes through $(2, -3)$.

$2x - 3y = -17$

$-3y = -2x - 17$

$y = -\frac{2}{-3}x - \frac{17}{-3}$

$y = \boxed{\frac{2}{3}}x + \frac{17}{3}$

Slope

Perp Slope: $-\frac{3}{2}$

$-\frac{3}{2} \cdot \frac{2}{3} = -\frac{6}{6} = -1$ ✓

$y - (-3) = -\frac{3}{2}(x - 2)$

$y + 3 = -\frac{3}{2}x + 3$

$2y + 6 = -3x + 6$

$\boxed{3x + 2y = 0}$