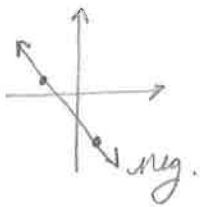$40/40 = 100$

Intermediate Algebra – Math 0099
University of North Georgia
Fall 2015
Exam #2
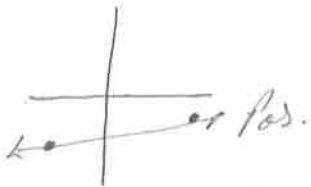
Name: _Key_ Date: _October 30, 2015_

1. Calculate the slope given the following two ordered pairs: $\left(-5, \frac{1}{2}\right)$ & $\left(\frac{3}{4}, -7\right)$

$$m = \frac{(-7) - \frac{1}{2}}{\left(\frac{3}{4}\right) - (-5)} = \frac{\frac{-14-1}{2}}{\frac{3+20}{4}} = \frac{\frac{-15}{2}}{\frac{23}{4}}$$

neg.

$$= -\frac{15}{2} \cdot \frac{\cancel{4}^{2}}{23} = \boxed{-\frac{30}{23}}$$

2. Find the equation of the line in Standard Form which passes through $(-8, -5)$ & $(11, -2)$

$$m = \frac{(-2) - (-5)}{(11) - (-8)} = \frac{-2+5}{11+8} = \frac{3}{19}$$

or Pos.

$$y - (-2) = \frac{3}{19}(x - 11)$$

$$y + 2 = \frac{3}{19}(x - 11)$$

$$19y + 38 = 3x - 33$$

$$-3x + 19y = -71$$

$$\boxed{3x - 19y = 71}$$

3. Find the equation of the line in Standard Form which passes through $(7, -3)$ and is parallel to $5x + 3y = 4$

$$3y = -5x + 4$$

$$y = \boxed{-\frac{5}{3}}x + \frac{4}{3}$$

$$y + 3 = -\frac{5}{3}(x - 7)$$

$$3y + 9 = -5x + 35$$

$$\boxed{5x + 3y = 26}$$

4. **Some functions are not relations. True or False?**

    False

5. **Determine if the following relation is a function. State the domain and range.**

    $$R = \left\{ \left(-2, \frac{5}{7} \right), (3, -8), (4, 5), \left(\frac{5}{7}, -2 \right), (-1, -8) \right\}$$

    Domain: $\left\{ -2, 3, 4, \frac{5}{7}, -1 \right\}$ no repeats → A function

    Range: $\left\{ \frac{5}{7}, -8, 5, -2 \right\}$

6. **Let $s(x) = 5x^2 - x$. Evaluate $\dfrac{s(x+h) - s(x)}{h}$**

    $$\frac{5(x+h)^2 - (x+h) - (5x^2 - x)}{h}$$

    $$\frac{5(x^2 + 2xh + h^2) - x - h - 5x^2 + x}{h}$$

    $$\frac{5x^2 + 10xh + 5h^2 - x - h - 5x^2 + x}{h}$$

    $$\frac{5h^2 + 10xh - h}{h}$$

    $$\frac{h(5h + 10x - 1)}{h}$$

    $$\boxed{5h + 10x - 1}$$

Perform the indicated operation on the below functions.

$g(n) = 2n + 5$
$h(n) = -n^2 + 5$

7. Find $(g - h)(n)$ $= 2n + 5 - (-n^2 + 5)$

$= 2n + 5 + n^2 - 5$

$= \boxed{n^2 + 2n}$

8. Find $(g \circ h)(n)$ $= 2(-n^2 + 5) + 5$

$= -2n^2 + 10 + 5$

$= \boxed{-2n^2 + 15}$

Solve.

9. $4(x - 2) + 5 = 2(x + 3)$

$4x - 8 + 5 = 2x + 6$

$4x - 3 =$

$2x = 9$

$\boxed{x = 9/2}$

Check

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

$4\left(\frac{9-4}{2}\right) + 5 = 2\left(\frac{9+6}{2}\right)$

$4\left(\frac{5}{2}\right) + 5 = 2\left(\frac{15}{2}\right)$

$\frac{20}{2} + 5 = \frac{30}{2}$

$10 + 5 = 15$

$15 = 15 \checkmark$

Simplify.

10. $\dfrac{i^{13}}{i^{27}} = \dfrac{\left(i^{\cdot 4}\right)^3 \cdot i}{\left(i^{\cdot 4}\right)^6 \cdot i^{\cdot 3}}$

$= \dfrac{i}{i^2 \cdot i} = \dfrac{i}{(-1) \cdot i}$

$= \dfrac{i}{-i} = \boxed{-1}$