Name: Garrett Read Class: MAT105 Date: 1/23/13 Row #19 ID: A

MAT 105 QUIZ A [Chapter A]

Short Answer

1. See A3 **Solve the inequality and express the solution as a graph and in interval notation.**

4 $4x - 5 < -17$ or $5x + 6 > 31$

$4x < -12$ $5x > 25$

$x < -3$ $x > 5$

$(-\infty, -3) \cup (5, \infty)$

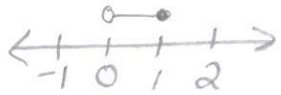
X $\{x \mid x \neq -3, 5\}$

2. See A3 **Solve the given inequality and state the solution in interval notation.**

4 3 $-2 \leq 2x - 4 < 4$

$2 \leq 2x < 8$

$1 \leq x < 4$



$(0, 1]$

$2 \leq 2x < 8$

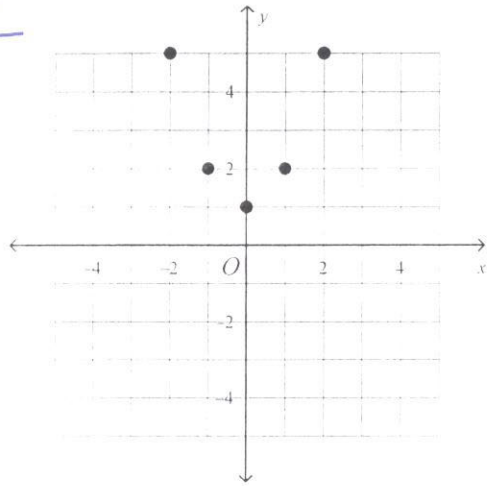
$1 \leq x < 4$

$[1, 4)$

3. See A4

Write the ordered pairs for the relation. Find the domain and range.

4 3



$(-2, 5)$ $(1, 2)$
$(-1, 2)$ $(2, 5)$
$(0, 1)$

X D: $(-\infty, \infty)$
R: $[1, \infty)$

D: $(-2, -1, 0, 1, 2)$
R: $(5, 2, 1)$

4. See A4

4 For $f(x) = 5x + 1$, find $f(-4)$.

$f(-4) = 5(-4) + 1$

$f(-4) = -19$

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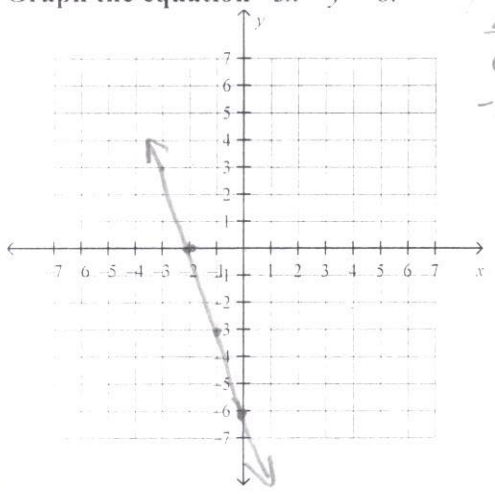
4 5. See A4 **Graph the equation $-3x - y = 6$.**



x	y
0	-6
-2	0

4 0 6. See A4 **Find the equation of the line described.**

through (2, 6) and perpendicular to $y = -\frac{5}{4}x + 1$.

$y = -\frac{4}{5} + 6$ ~~$y = \frac{4}{5}x + 6$~~

$y = m(x - x_1) + y_1$

$y = \frac{4}{5}(x - 2) + 6$

$4/5x - 8/5 + 6$

$y = 4/5x + 22/5$

4 7. See A4 **State the domain of the given expression.**

$$\frac{p^2 - 4p - 32}{p + 4}$$

D: $\{p \mid p \neq -4\}$

4 2 8. See A5 **Solve the given system of equations.**

$$\begin{cases} 5x - y = 5 \\ 5x - 3y = 15 \end{cases}$$

$-5x + y = -5$

$5x - 3y = 15$

$-2y = 10$

$y = 10$

$5x - 10 = 5$

$5x = 15$

$x = 3$

$-5x + y = -5$

$5x - 3y = 15$

$-2y = 10$

$y = -5$

$5x - (-5) = 5$

$5x + 5 = 5$

$5x = 0$

$x = 0$

$(0, -5)$

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9. See A5 **Use a system of equations to solve the given situation.**
Mrs. Huang operates a soybean farm. She buys many supplies in bulk. Often the bulk products need to be custom mixed before Mrs. Huang can use them. To apply herbicide to a large field she must mix a solution of 67% herbicide with a solution of 46% herbicide to form 42 liters of a 55% solution. How much of the 67% solution must she use?

4

x = 67%
y = 46%
42 = 55%

$(x + y = 42)(.67)$ → $.67x + .67y = 28.14$
$.67x + .46y = .55(42)$ $.67x + .46y = 23.1$

$.21y = -5.04$
$y = 24$
$x = 18$

18 liters of 67% solution

4 10. See A6 **Simplify the expression.**

$(4w^2 - 4w - 8) - (2w^2 + 3w - 6)$

$2w^2 - 7w - 2$

4 11. See A6 **Simplify the product.**

$8x^2(4x^2 + 4y^6)$

$32x^4 + 32x^2y^6$

4 12. See A6 **Simplify the product.**

$(4x + 3)(2x + 5)$

$8x^2 + 20x + 6x + 15$ → $8x^2 + 26x + 15$

4 13. See A6 **Simplify the product.**

$(2k + 3)(2k^2 - 4k - 3)$

$4k^3 - 8k^2 - 6k + 6k^2 - 12k - 9$

$4k^3 - 2k^2 - 18k - 9$

4 14. See A6 **Divide the polynomial and express division.**

$(x^4 + 15x^3 - 77x^2 + 13x - 36) \div (x - 4)$

4) 1 15 -77 13 -36
4 76 -4 36
1 19 -1 9 0

$x^3 + 19x^2 - x + 9$

4 15. See A7 **Factor the expression.**

$d^2 + 10d + 9$

$(d+9)(d+1)$

4 16. See A7 **Solve by factoring.**

$4x^2 + 28x - 32 = 0$

$-128 = m \cdot n$
$28 = m+n$

$4x^2 - 4x \quad 32x - 32 = 0$
$4x(x-1) \quad 32(x-1) = 0$
$(x-1)(4x+32)$
$x = 1, -8$

4 17. See A7 **Factor the expression.**

$9x^2 - 16$

$(3x-4)(3x+4)$

4 18. See A7 **Factor the expression.**

$16x^2 + 40x + 25$

$400 = m \cdot n$
$40 = m+n$

$16x^2 + 20x + 20x + 25$
$4x(4x+5) \quad 5(4x+5)$
$(4x+5)^2$

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19. See A7 **Factor the expression.**

$x^2 - 2x - 63$

-63 : mon
-2 : mon 4 $(x-9)(x+7)$

20. See A8 **Solve.**

4 2 $\frac{k+5}{k-5} = \frac{k-4}{k+4}$

$(k-5)(k-4) = (k+4)(k+5)$

$k^2 - 4k - 5k + 20 = k^2 + 5k + 4k + 20$

$k^2 + 20 = k^2 + 20$

$k = (-\infty, \infty)$

$(k-5)(k-4) = (k-4)(k+5)$

$k^2 - 4k - 5k + 20 = k^2 - 5k - 4k + 20$

$k^2 - 9k + 20 = k^2 + 9k + 20$

$+9k \qquad +9k$

$k^2 + 20 = k^2 + 18k + 20$

$-20 \qquad -20$

$k^2 = k^2 + 18k$

$-k^2 \quad -k^2$

$0 = 18k$

$0 = k$