

# Solutions -- Alg 2A Review Problems for Trimester Exam

Domain/Range

1a)  $-4 \leq x < 2$

domain  
range  $-3 \leq y < 5$

1b) domain  $-3 \leq x \leq 2$   
range  $-2 \leq y \leq 3$

3) a, f, and g should be circled

4)  $y = \frac{1}{3}x - 1$

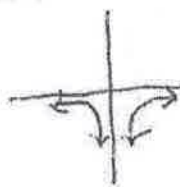
2a) domain all reals can be written as  $-\infty < x < \infty$

range  $y \geq 0$   $0 \leq y < \infty$

2b) domain all reals except  $x=3$   $-\infty < x < \infty, x \neq 3$

range all reals except  $y=1$   $-\infty < y < \infty, y \neq 1$

2c) graph on calculator



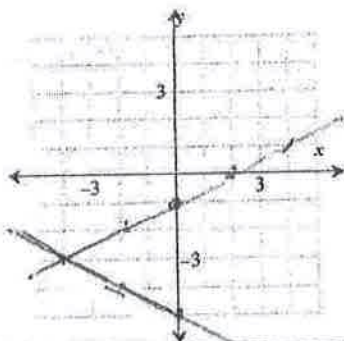
domain all reals except  $x=0$   
 $-\infty < x < \infty, x \neq 0$

range  $y < 0$

$-\infty < y < 0$

5)  $y = -\frac{1}{2}x - 5$  and  $x - 2y = 2$

$-2y = -x + 2$   
 $2y = x - 2$   
 $y = \frac{1}{2}x - 1$



7)  $\frac{3(x-4)}{5} = \frac{4-x}{2}$

can cross multiply or just clear fractions.

$3(x-4) \cdot 2 = 5(4-x)$

$6(x-4) = 20 - 5x$

$6x - 24 = 20 - 5x$

$11x - 24 = 20$

$11x = 44$

$x = 4$

6) (5, -1) (-1, 2)

slope =  $\frac{\Delta y}{\Delta x} = \frac{2 - (-1)}{-1 - 5} = \frac{3}{-6} = -\frac{1}{2}$

$y = mx + b$

$y = -\frac{1}{2}x + b$

(5, -1)  $-1 = -\frac{1}{2}(5) + b$

$-1 = -\frac{5}{2} + b$

$b = 1.5$

$y = -\frac{1}{2}x + 1.5$

8)

$(2x+5) - (5x+4) = 6 - 2(x-3)$

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

$-3x+9 = -2x$

$-3x+9 = -2x$

$x=8$

error (-)

2nd zero

answer should be  $x = -11$

9)  $f(x) = (x-4)^2$   
 a)  $f(3) = (3-4)^2$   
 $= (-1)^2$   
 $= \underline{\underline{1}}$

b)  $f(-2) = (-2-4)^2$   
 $= (-6)^2$   
 $= \underline{\underline{36}}$

a)  $f(x) = 25$   
 $(x-4)^2 = 25$   
 $\sqrt{\quad} \quad \sqrt{\quad}$   
 $x-4 = \pm\sqrt{25}$   
 $x-4 = 5 \quad x-4 = -5$   
 $x = 9 \quad x = -1$

10)  $f(x) = \sqrt{2x-8}$   
 a)  $f(12) = \sqrt{2(12)-8}$   
 $= \sqrt{24-8}$   
 $= \sqrt{16}$   
 $= \underline{\underline{4}}$

b)  $\sqrt{2x-8} = 3$   
 square both sides  
 $2x-8 = 9$   
 $2x = 17$   
 $x = \underline{\underline{8.5}}$

11)  $6x^3 + 5x^2 = 0$   
 factor out  $x^2$  which is common  
 Use zero product property  
 $x^2(6x+5) = 0$   
 $x^2 = 0 \quad 6x+5 = 0$   
 $x = 0 \quad x = -\frac{5}{6}$

12)  $4m^4 - 6m^3 + 2m^2$   
 $2m^2(2m^2 - 3m + 1)$   
 $2m^2(2m-1)(m-1)$   
 Factored completely

|      |         |      |
|------|---------|------|
|      | $m-1$   |      |
| $2m$ | $2m-2m$ | $2m$ |
| $-1$ | $-m$    | $1$  |

$\swarrow$   $2m$   
 $\searrow$   $-3m$

13)  $(3x+7)(4x-7)(9874x) = 0$   
 Use zero product property  
 $3x+7=0 \quad 4x-7=0 \quad 9874x=0$   
 $x = -\frac{7}{3} \quad x = \frac{7}{4} \quad x = 0$   
 (b) and (c)  
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14)  $3x^3 + 6x^2 - 45x = 0$   
 can't divide by  $x$  because it would eliminate a solution.  
 $3x(x^2 + 2x - 15) = 0$   
 $x^2 + 2x - 15 = 0$   
 $(x-5)(x+3) = 0$   
 $x = 5 \text{ or } x = -3$   
 instead:  $3x(x+5)(x-3) = 0$   
 Use zero product property  
 $3x=0 \quad x+5=0 \quad x-3=0$   
 $x=0 \quad x=-5 \quad x=3$

15)  $y - 8x - 9 = 3(x^2 + 2x) + 8x - 9$   
 $y - 8x - 9 = 3x^2 + 6x + 8x - 9$   
 $y - 8x - 9 = 3x^2 + 14x - 9$   
 $y = \underline{\underline{3x^2 + 22x - 1}}$