

# WARMUP

$$\textcircled{1} \left(\frac{1}{125}\right)^{n+1} \cdot 25^n = (\sqrt{5})^{-6n-4}$$

$$5^{-3n-3} \cdot 5^{2n} = 5^{-3n-2}$$

$$-3n-3 + 2n = -3n-2$$

$$2n = 1$$

$$n = \frac{1}{2}$$

$$\textcircled{2} 27^{-x} \cdot 81 = 243^{3-3x}$$

$$3^{-3x} \cdot 3^4 = 3^{15-15x}$$

$$-3x + 4 = 15 - 15x$$

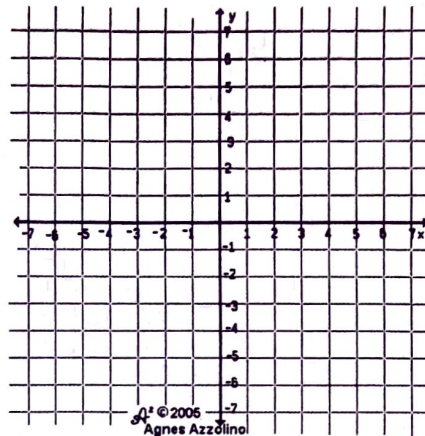
$$12x = 11$$

$$x = \frac{11}{12}$$

5.  $y = -\sqrt[3]{2x + 2} - 3$

Domain: \_\_\_\_\_

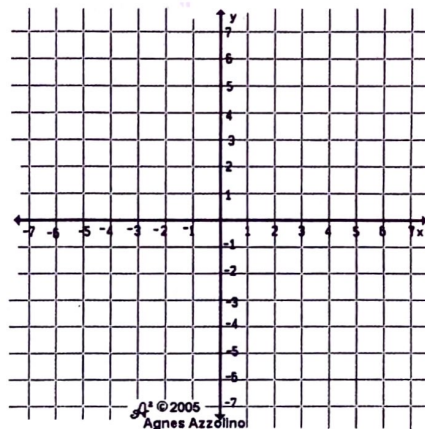
Range: \_\_\_\_\_



6.  $y = \frac{1}{2} \left( \frac{1}{3}x - \frac{1}{3} \right)^2 - 1$

Domain: \_\_\_\_\_

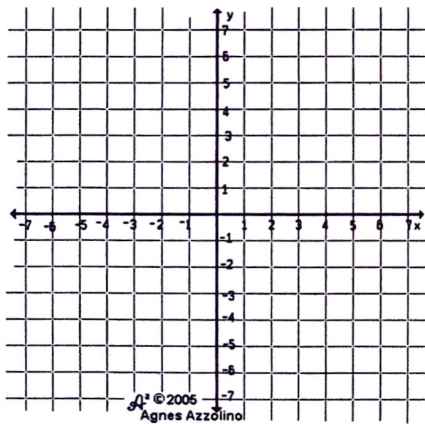
Range: \_\_\_\_\_



7.  $y = -3 \left| \frac{1}{2}x - 2 \right| + 3$

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

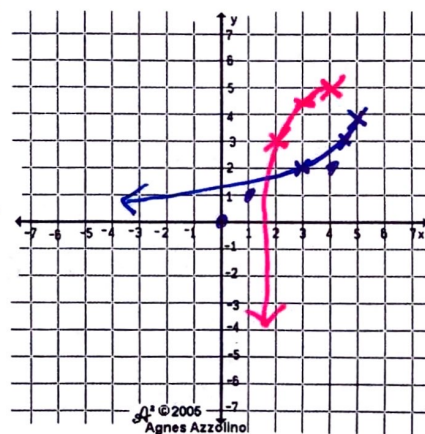


8.  $y = -\sqrt{-2x + 10} + 4 = -\sqrt{-2(x-5)} + 4$

Domain:  $\{x \mid x \leq 5\}$

Range:  $\{y \mid y \leq 4\}$

$y = \sqrt{x}$   
 ROXA  
 RUYA  
 h. comp.  $\frac{1}{2}$   
 right + 5  
 UP 4



Graph  $f^{-1}(x)$ .

$f(x)$

x	y
5	4
4.5	3
3	2

flip  
 $x \leftrightarrow y$

$f^{-1}(x)$

x	y
4	5
3	4.5
2	3

$Df^{-1}(x): \{x \mid x \leq 4\}$   
 $Rf^{-1}(x): \{y \mid y \leq 5\}$

$$y = -\sqrt{-2x+10} + 4$$

$$x = -\sqrt{-2y+10} + 4$$

$$-1(x-4 = -\sqrt{-2y+10})$$

$$(-x+4)^2 = (\sqrt{-2y+10})^2$$

$$(-x+4)^2 = -2y+10$$

$$\frac{(-x+4)^2 - 10}{-2} = \frac{-2y}{-2}$$

$$\frac{-1}{2} [(-x+4)^2 - 10] = y$$

\* restrict domain!

$$f^{-1}(x) = \frac{(-x+4)^2 - 10}{-2}, \quad \underline{\underline{x \leq 4}}$$