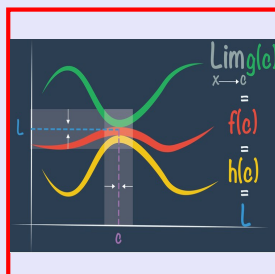


Math 261

Fall 2023

Lecture 2



Class QZ 1

Solve $3x^2 - 5x - 8 = 0$ by quadratic formula.

Express final answer in Solution Set.

Make sure to box

Your final answer.

$a=3, b=-5, c=-8$

$b^2 - 4ac = (-5)^2 - 4(3)(-8) = 25 + 96 = 121$

$x = \frac{-(-5) \pm \sqrt{121}}{2(3)} = \frac{5 \pm 11}{6}$
 $\rightarrow x = \frac{5+11}{6} = \frac{16}{6} = \frac{8}{3}$
 $\rightarrow x = \frac{5-11}{6} = \frac{-6}{6} = -1$

$\left\{ -1, \frac{8}{3} \right\}$

$\left\{ x = -1, x = \frac{8}{3} \right\}$

Not a Solution Set

$x = \left\{ -1, \frac{8}{3} \right\}$

Not a Solution Set

$\left\{ x \mid \left(-1, \frac{8}{3} \right) \right\}$

Not a Solution Set

Graph $x^2 + y^2 = 4$

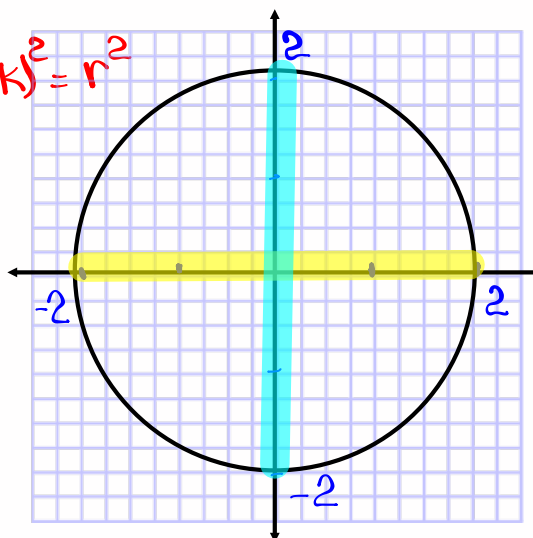
Circle $(x-h)^2 + (y-k)^2 = r^2$

Center $(h, k) = (0, 0)$

Radius $r = 2$

Domain $[-2, 2]$

Range $[-2, 2]$



Graph $(x-3)^2 + y^2 = 16$

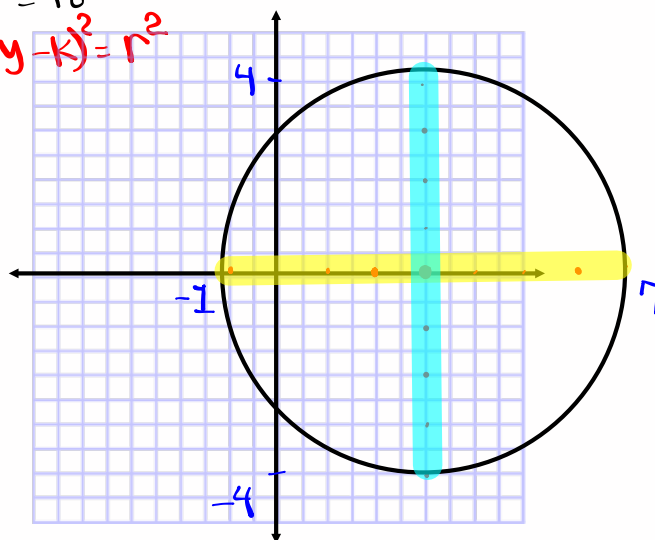
$(x-h)^2 + (y-k)^2 = r^2$

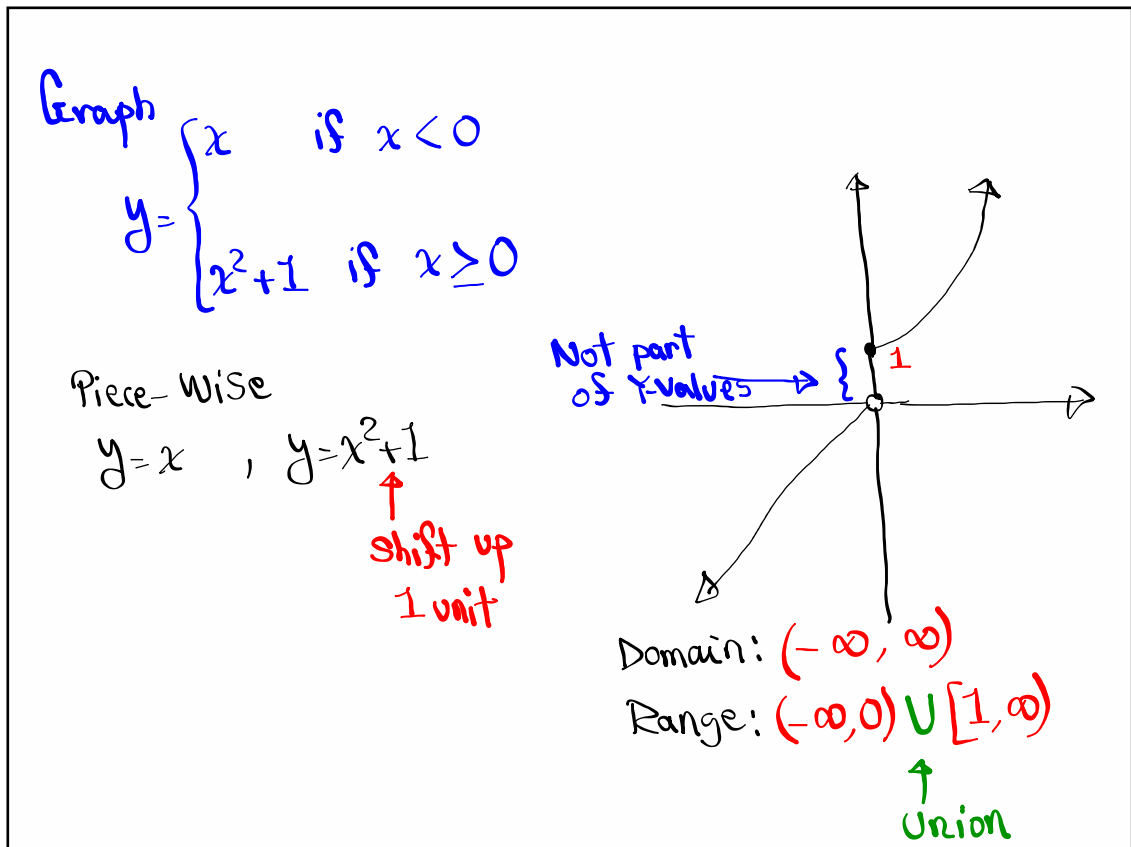
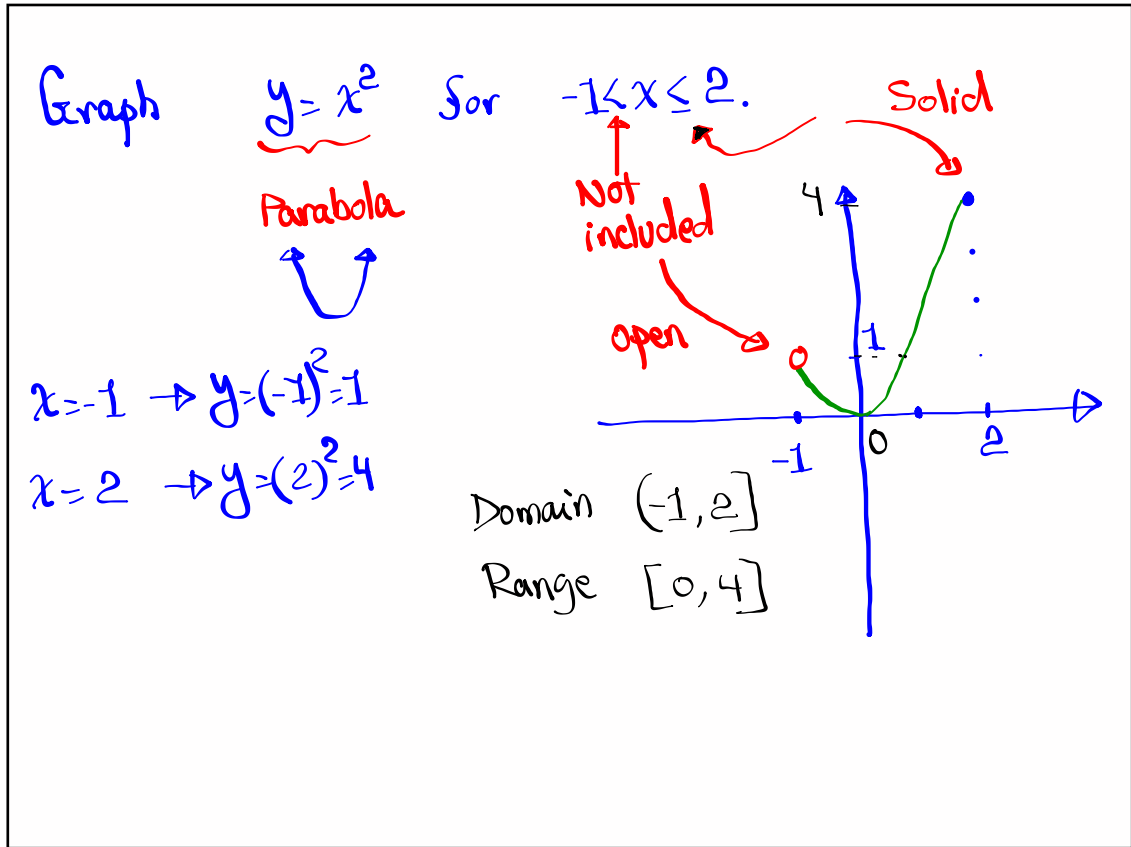
Center $\rightarrow (3, 0)$

Radius $\rightarrow r = 4$

Domain $[-1, 7]$

Range $[-4, 4]$





Back to Factoring:

$$\checkmark A^2 - B^2 = (A + B)(A - B)$$

$$\checkmark A^2 + B^2 = \text{Prime}$$

$$\checkmark A^3 - B^3 = (A - B)(A^2 + AB + B^2)$$

$$\checkmark A^3 + B^3 = (A + B)(A^2 - AB + B^2)$$

Factor completely:

$$1) x^2 - 100 = x^2 - 10^2$$

$$= (x+10)(x-10)$$

$$2) x^2 + 36 = x^2 + 6^2$$

$$\text{Prime}$$

$$3) x^3 - 64 = x^3 - 4^3$$

$$= (x-4)(x^2 + 4x + 16)$$

$$4) x^3 + 1000$$

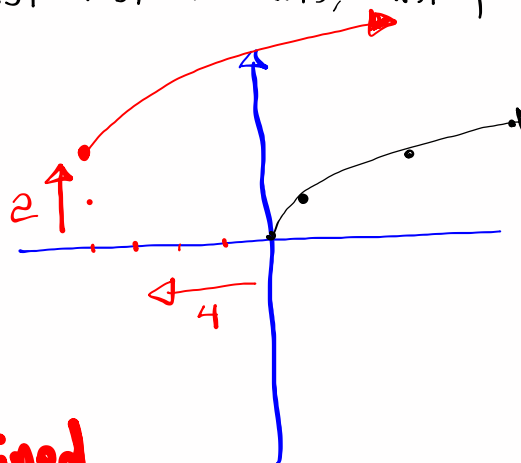
$$= x^3 + 10^3$$

$$= (x+10)(x^2 - 10x + 100)$$

Graph $y = \sqrt{x}$, then shift left 4 units, shift up

2 units.

x	y
0	0
1	1
4	2
9	3



Can x be negative? **NO**

$x = -1 \rightarrow y = ?$ **undefined**

NO imaginary # in
Calculus.

Simplify $(A+B)^2 - (A-B)^2$

$$= (A+B)(A+B) - (A-B)(A-B)$$

$$= A^2 + AB + BA + B^2 - (A^2 - AB - BA + B^2)$$

$$= \cancel{A^2} + \underline{2AB} + \cancel{B^2} - \cancel{A^2} + \underline{2AB} - \cancel{B^2}$$

$$= \boxed{4AB}$$

Class QZ 2

Graph $x^2 + (y+2)^2 = 4$

Give domain & range

in interval notation.

Center $(0, -2)$

Radius 2

