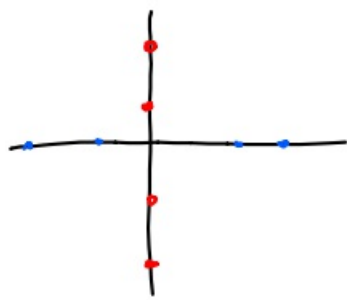


2-3-20 1st Trig



Blue $(-, 0)$

Red $(0, -)$

- ① Find where the x-intercept and y-intercept are on $f(x) = x^2 + 7x + 10$

x-intercept

$$0 = x^2 + 7x + 10$$

$$0 = (x+2)(x+5)$$

$$x+2=0 \quad x+5=0$$

$$x=-2 \quad x=-5$$

$$(-2, 0) \quad (-5, 0)$$

y-int $(0, y)$
 $x=0$

$$y = 0^2 + 7 \cdot 0 + 10$$

$$y = 10$$

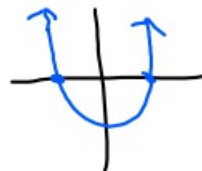
$$(0, 10)$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac} \text{ discriminant}}{2a}$$

$b^2 - 4ac = \text{negative}$ No solutions

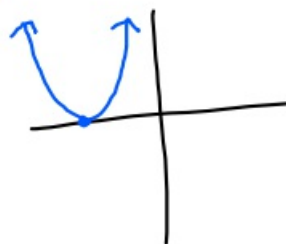


$b^2 - 4ac = \text{positive}$ \neq 2 solutions



$b^2 - 4ac = \text{zero}$

1 solution



② Tell how many solutions exist to

$$4x^2 + x + 7 = 0$$

$$\begin{aligned} a &= 4 \\ b &= 1 \\ c &= 7 \end{aligned}$$

$$b^2 - 4ac$$

$$1^2 - 4 \cdot 4 \cdot 7$$

= negative

None

Negative \rightarrow No

Positive \rightarrow 2

Zero \rightarrow 1



③ How many solutions exist

$$\text{on } 2x^2 - 4x + 2 = 0$$

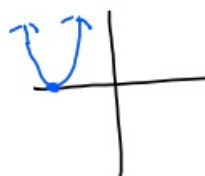
$$\begin{aligned} a &= 2 \\ b &= -4 \\ c &= 2 \end{aligned}$$

$$b^2 - 4ac$$

$$(-4)^2 - 4 \cdot 2 \cdot 2$$

$$16 - 16 = 0$$

one solution



$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{4 \pm \sqrt{0}}{4}$$

$$x = \frac{4 \pm 0}{4}$$

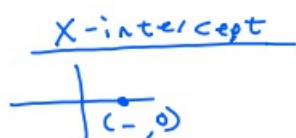
$$\frac{4+0}{4}$$

$$\frac{4-0}{4}$$

1

1

④ Give the x and y-intercepts of $f(x) = x^2 - 9$.



$$0 = x^2 - 9$$

$$0 = (x+3)(x-3)$$

$$x+3=0 \quad x-3=0$$

$$x = -3$$

$$x = 3$$

$$(-3, 0) \quad (3, 0)$$

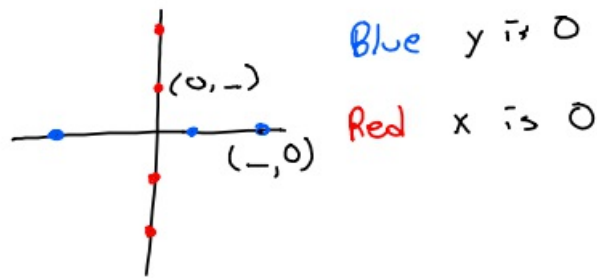


$$y = 0^2 - 9$$

$$y = -9$$

$$(0, -9)$$

2-3-20 3rd Trig



① Find the x and y -intercepts of
 $f(x) = x^2 + 9x + 20$

x -intercept $(-, 0)$
 $0 = x^2 + 9x + 20$

$$0 = (x+5)(x+4)$$

$$x+5=0 \quad x+4=0$$

$$x=-5 \quad x=-4$$

$$(-5, 0) \quad (-4, 0)$$

y -intercept $(0, -)$
 $x=0$

$$y = 0^2 + 9 \cdot 0 + 20$$

$$y = 20$$

$$(0, 20)$$

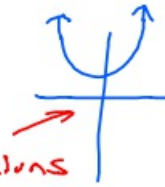
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Discriminant

$$b^2 - 4ac = \text{negative}$$

#

NO SOLUTIONS



$$b^2 - 4ac = \text{positive}$$

#

2 solutions



$$b^2 - 4ac = 0$$

1 solution



② How many solutions are there to

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

$$a=2$$

$$b=-4$$

$$c=2$$

$$b^2 - 4ac$$

$$(-4)^2 - 4 \cdot 2 \cdot 2 =$$

$$16 - 16$$

$$0$$

1 solution



③ How many solutions exist in

$$3x^2 - 7x + 4 = 0$$

$$a=3$$

$$b=-7$$

$$c=4$$

$$b^2 - 4ac$$

$$(-7)^2 - 4 \cdot 3 \cdot 4$$

$$49 - 48$$

\Rightarrow positive \therefore 2 solutions

④ How many solutions to

$$3x^2 + 2x + 9 = 0$$

$$a=3$$

$$b=2$$

$$c=9$$

$$b^2 - 4ac$$

$$2^2 - 4 \cdot 3 \cdot 9$$

$$4 - 108$$

$$-104 \quad \text{No solutions}$$

⑤ Calculate the x and y-intercept of

$$f(x) = x^2 - 4.$$

x-intercepts



$$0 = x^2 - 4$$

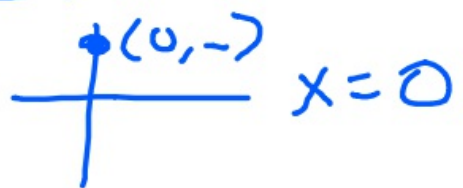
$$0 = (x-2)(x+2)$$

$$x-2=0 \quad x+2=0$$

$$x=2 \quad x=-2$$

$$(2, 0) \quad (-2, 0)$$

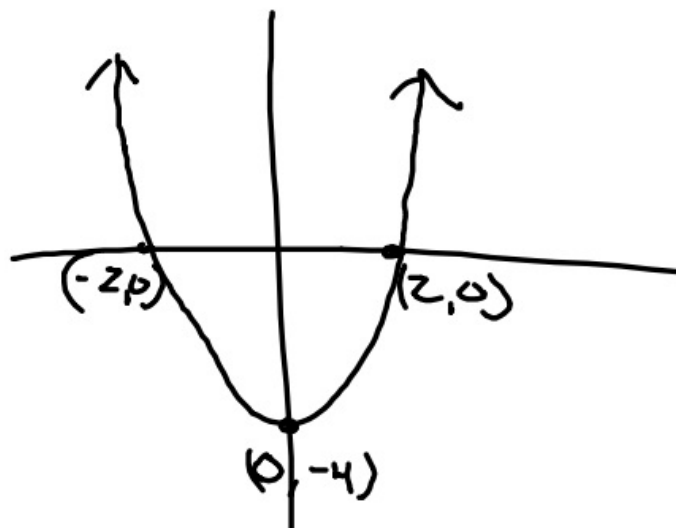
y-int



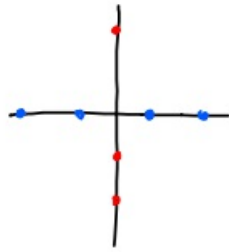
$$y = 0^2 - 4$$

$$y = -4$$

$$(0, -4)$$



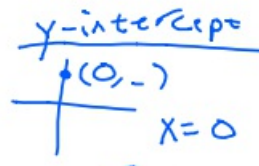
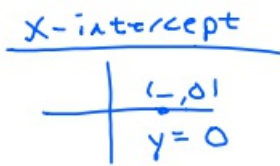
2-3-20 4th Trig



Blue $(-, 0)$
 $y=0$

Red $(0, -)$
 $x=0$

① Find the x and y-intercepts for $f(x) = x^2 + 5x + 4$



$$0 = x^2 + 5x + 4$$

$$y = 0^2 + 5 \cdot 0 + 4$$

$$y = 4$$

$$0 = (x+4)(x+1)$$

$$(0, 4)$$

$$x+4=0$$

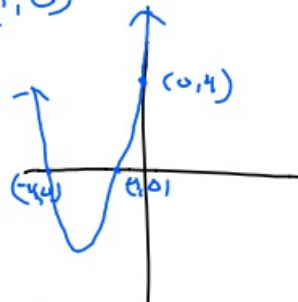
$$x+1=0$$

$$x = -4$$

$$x = -1$$

$$(-4, 0)$$

$$(-1, 0)$$



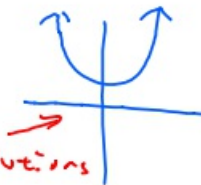
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Discriminant

$$b^2 - 4ac = \text{negative}$$

#

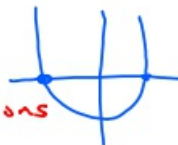
No Solutions



$$b^2 - 4ac = \text{positive}$$

#

2 Solutions



$$b^2 - 4ac = 0$$

1 solution



② How many solutions exist
in $x^2 - x + 1 = 0$

$$\begin{aligned} a &= 1 \\ b &= -1 \\ c &= 1 \end{aligned}$$

$$b^2 - 4ac$$

$$(-1)^2 - 4 \cdot 1 \cdot 1$$

$$1 - 4 = -3$$

No solution



③ How many solutions exist for

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

$$\begin{aligned} a &= 2 \\ b &= -4 \\ c &= 2 \end{aligned}$$

$$b^2 - 4ac$$

$$(-4)^2 - 4 \cdot 2 \cdot 2$$

$$16 - 16$$

$$0$$

1 solution



④ How many solutions exist in

$$4x^2 + 7x + 8 = 0$$

$$\begin{aligned} a &= 4 \\ b &= 7 \\ c &= 8 \end{aligned}$$

$$b^2 - 4ac$$

$$7^2 - 4 \cdot 4 \cdot 8$$

$$49 - 128$$

$$-79$$

No solutions

