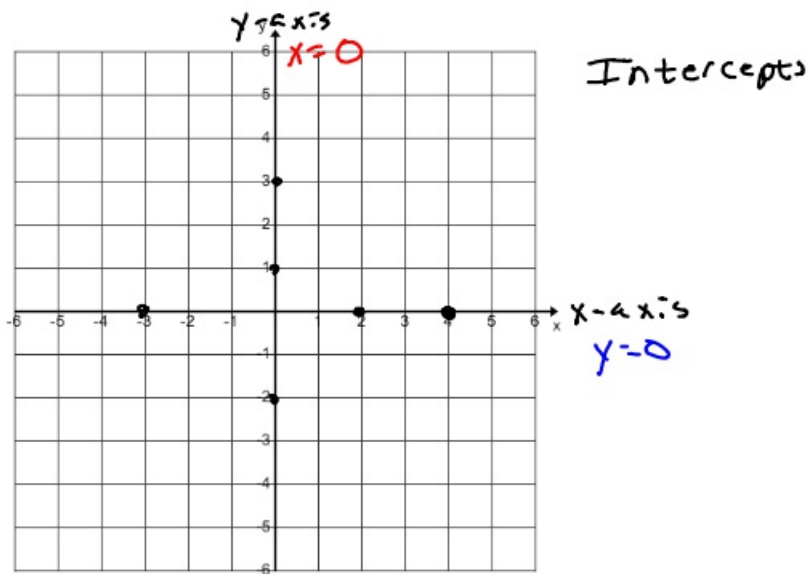


1-16-18 1st Trig



① $f(x) = x^2 + 6x + 8$

y-intercept

$$x = 0$$

$$y = 0^2 + 6 \cdot 0 + 8$$

$$y = 8 \quad (0, 8)$$

x-intercept

$$y = 0$$

$$0 = x^2 + 6x + 8$$

$$0 = (x+4)(x+2)$$

$$x+4=0$$

$$x+2=0$$


$$x = -4$$

$$x = -2$$


$$(-4, 0)$$

$$(-2, 0)$$

$$\textcircled{2} f(x) = 4x - 20$$

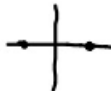
x-intercept 
 $y = 0$

$$\begin{array}{r} 0 = 4x - 20 \\ +20 \quad +20 \\ \hline 20 = 4x \\ x = 5 \end{array} \quad (5, 0)$$


y-intercept 
 $x = 0$

$$\begin{aligned} y &= 4 \cdot 0 - 20 \\ y &= 0 - 20 \\ y &= -20 \end{aligned} \quad (0, -20)$$

$$\textcircled{3} f(x) = -2x + 6$$


x-intercept 
 $y = 0$

$$\begin{array}{r} 0 = -2x + 6 \\ -6 \quad -6 \\ \hline -6 = -2x \\ x = 3 \end{array} \quad (3, 0)$$

y-intercept 
 $x = 0$

$$\begin{aligned} y &= -2(0) + 6 \\ y &= 6 \end{aligned} \quad (0, 6)$$

④ $f(x) = x^2 + 13x + 12$

x-intercept 
 $y = 0$


$$0 = x^2 + 13x + 12$$

$$0 = (x+12)(x+1)$$

$$x+12=0 \quad x+1=0$$

$$x = -12 \quad x = -1$$

$$(-12, 0) \quad (-1, 0)$$

y-intercept 

$$x = 0$$

$$y = 0^2 + 13(0) + 12$$

$$y = 12$$

$$(0, 12)$$

Discriminant

$$x^2 + 8x - 5 = 0$$

If we wanted to solve,
 we would use

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

$$\sqrt{+} \quad 2 \text{ solutions}$$

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

$$\sqrt{0} \quad 1 \text{ solution}$$

2 solutions



No solutions



1 solution



⑤ How many solutions exist to

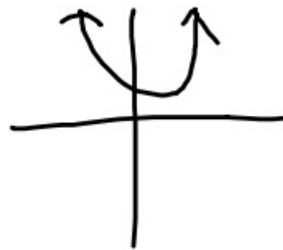
$$f(x) = \frac{1}{a}x^2 - \frac{2}{b}x + \frac{8}{c}$$

$$b^2 - 4ac$$

$$(-2)^2 - 4 \cdot 1 \cdot 8$$

$$4 - 32$$

$$-28 \text{ No solutions}$$



⑥ How many solutions to

$$f(x) = \frac{2}{a}x^2 + \frac{4}{b}x + \frac{1}{c}$$

$$b^2 - 4ac$$

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

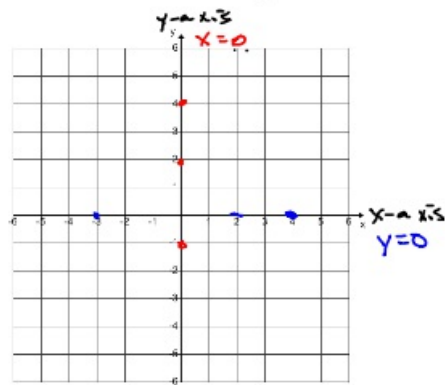
$$16 - 8 = 8$$

2 solutions



1-16-18 3rd Trig

Intercepts



① $f(x) = x^2 + 7x + 10$

x-intercept
 $y = 0$

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

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

$$x+5=0$$

$$x = -5$$

$$(-5, 0)$$

$$x+2=0$$

$$x = -2$$

$$(-2, 0)$$

y-intercept
 $x = 0$

$$y = 0^2 + 7(0) + 10$$

$$y = 10$$

$$(0, 10)$$

② $f(x) = 3x - 6$

x-intercept

$$y = 0$$

$$0 = 3x - 6$$

$$x = 2$$

$$(2, 0)$$

y-intercept

$$x = 0$$

$$y = 3 \cdot 0 - 6$$

$$y = -6$$

$$(0, -6)$$

$$\textcircled{3} f(x) = x^2 + 4x - 12$$

X-intercept $y=0$

$$0 = x^2 + 4x - 12$$

$$0 = (x-2)(x+6)$$

$$x-2=0 \quad x+6=0$$

$$x=2 \quad x=-6$$

$$(2,0) \quad (-6,0)$$

y-intercept $x=0$




$$y = 0^2 + 4(0) - 12$$

$$y = -12$$

$$(0,-12)$$

Discriminant

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

$\sqrt{-}$	No solutions	
$\sqrt{+}$	2 solutions	
$\sqrt{0}$	1 solution	

$\textcircled{4}$ Find discriminant and tell how many solutions

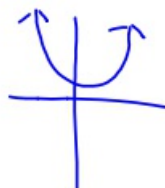
$$f(x) = \frac{2x^2}{a} - \frac{4x}{b} + \frac{5}{c}$$

$$b^2 - 4ac$$

$$(-4)^2 - 4 \cdot 2 \cdot 5$$

$$16 - 40$$

$$-24 \quad \text{No solutions}$$



⑤ $f(x) = 3x^2 + 5x + 2$

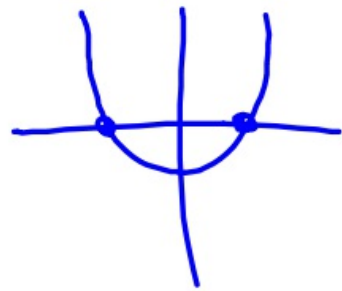
$$b^2 - 4ac$$

$$5^2 - 4 \cdot 3 \cdot 2$$

$$25 - 24$$

1

2 solutions



⑥ $f(x) = 2x^2 + 4x + 2$

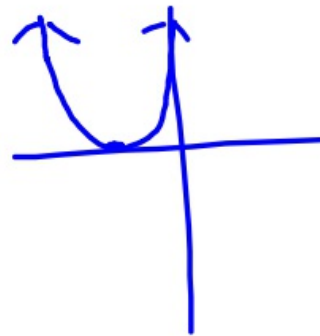
$$b^2 - 4ac$$

$$4^2 - 4 \cdot 2 \cdot 2$$

$$16 - 16$$

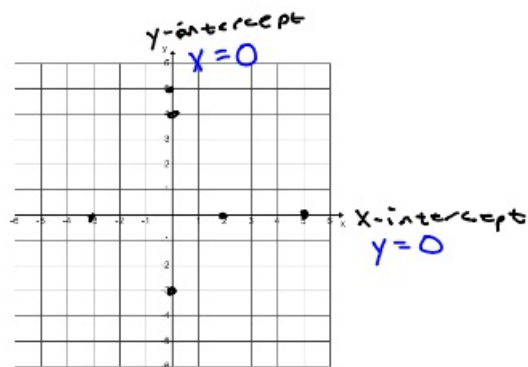
0

1 solution



1-16-18 4th Trig

Intercepts



① $f(x) = x^2 + 4x + 3$

x-intercept
 $y=0$

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

$$0 = (x+3)(x+1)$$

$$\begin{array}{r} x+3=0 \\ -3 \quad -3 \\ \hline \end{array}$$

$$x = -3$$

$$(-3, 0)$$

$$\begin{array}{r} x+1=0 \\ -1 \quad -1 \\ \hline \end{array}$$

$$x = -1$$

$$(-1, 0)$$

y-intercept
 $x=0$

$$y = 0^2 + 4(0) + 3$$

$$y = 3$$

$$(0, 3)$$

② $f(x) = 4x - 8$

x-intercept

$$y=0 \quad 0 = 4x - 8$$

$$x = 2$$

$$(2, 0)$$

y-intercept

$$x=0$$

$$y = 4 \cdot 0 - 8$$

$$y = -8$$

$$(0, -8)$$

$$\textcircled{3} f(x) = x^2 + 7x + 10$$

x-intercept 

$$y=0$$

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

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

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

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

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

y-intercept

$$x=0$$

$$y = 0^2 + 7(0) + 10$$

$$y = 10$$

$$(0, 10)$$

Discriminant

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

$\sqrt{+}$ 2 solutions

$\sqrt{-}$ No solutions

$\sqrt{0}$ 1 solution



Give the discriminant and number of solutions.

④ $\frac{3}{a}x^2 + \frac{6}{b}x + \frac{5}{c} = 0$

$$b^2 - 4ac$$

$$6^2 - 4 \cdot 3 \cdot 5$$

$$36 - 60$$

$$-24$$

No solutions

⑤ $x^2 + 2x + 1 = 0$

$$b^2 - 4ac$$

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

$$0$$

1 solution



⑥ $4x^2 + 9x - 1 = 0$

$$b^2 - 4ac$$

$$9^2 - 4 \cdot 4 \cdot (-1)$$

$$81 + 16$$

$$97$$

2 solutions

