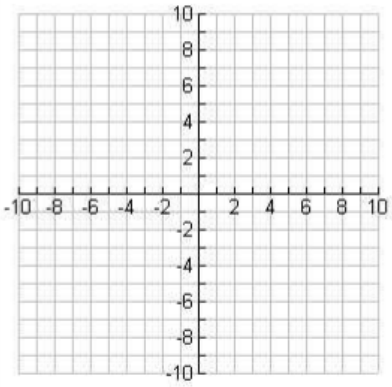
b. $g(x) = x^2 + 6x + 9$



$-x^2 \neq (-x)^2$

opens up/down

Vertex

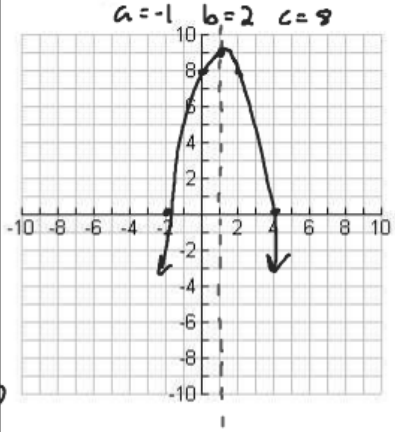
A.O.S

y-intercept

x-intercepts

c. $h(x) = -x^2 + 2x + 8$

$a = -1 \quad b = 2 \quad c = 8$



opens down

$x = \frac{-b}{2a} = \frac{-2}{(2)(-1)} = \frac{-2}{-2} = 1$

$h(1) = -(1)^2 + 2(1) + 8$

$= -1 + 2 + 8$

$= 9$

$V(1, 9)$

A.O.S $x = 1$

Y-intercept $(0, 8)$

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

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

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

$x - 4 = 0 \quad x + 2 = 0$

$x = 4 \quad x = -2$

$3\left(\frac{5}{6}\right)^2 - 5\left(\frac{5}{6}\right) - 2$

$3\left(\frac{25}{36}\right) - 5\left(\frac{5}{6}\right) - 2$

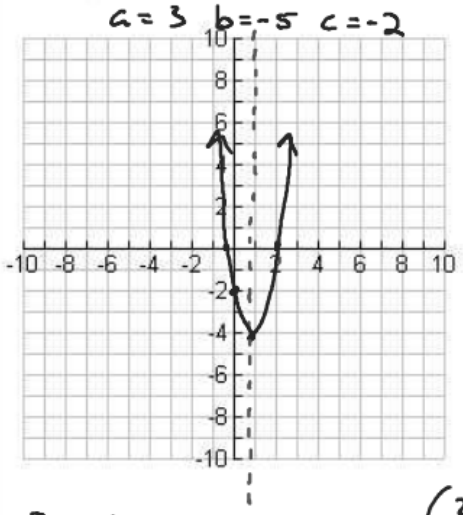
$\frac{75}{36} - \frac{25}{6} - \frac{2}{1}$

$\frac{75}{36} - \frac{150}{36} - \frac{72}{36}$

$\frac{-147}{36}$

d. $f(x) = 3x^2 - 5x - 2$

$a = 3 \quad b = -5 \quad c = -2$



opens up

$x = \frac{-b}{2a} = \frac{5}{2(3)} = \frac{5}{6}$

$V\left(\frac{5}{6}, -\frac{147}{36}\right)$

A.O.S $x = \frac{5}{6}$

y-intercept $(0, -2)$

x-intercepts

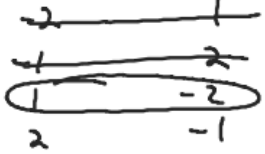
$3x^2 - 5x - 2 = 0$

$(3x+1)(x-2) = 0$

$3x+1=0 \qquad x-2=0$

$3x = -1 \qquad x = 2$

$x = -\frac{1}{3}$



$3x - 2x$

$6x - x$

$-6x + x$

Quadratic Formula

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

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

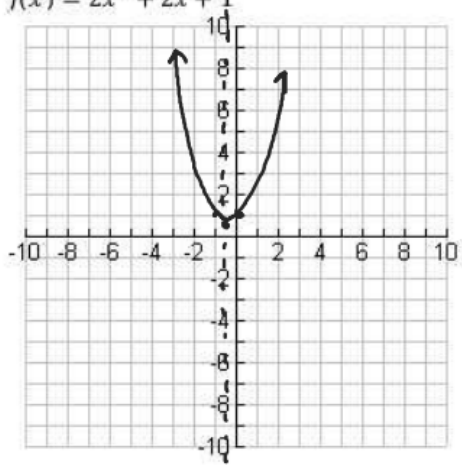
$\frac{-2}{2(2)} \pm \frac{\sqrt{2^2-4(2)(1)}}{2(2)}$

$-\frac{1}{2} \pm \frac{\sqrt{4-8}}{4}$

No x-intercepts

$a = 2 \quad b = 2 \quad c = 1$

e. $j(x) = 2x^2 + 2x + 1$



opens up

$x = \frac{-b}{2a} = \frac{-2}{2(2)} = -\frac{1}{2}$

$2\left(-\frac{1}{2}\right)^2 + 2\left(-\frac{1}{2}\right) + 1$

$2\left(\frac{1}{4}\right) + 2\left(-\frac{1}{2}\right) + 1$

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

$V\left(-\frac{1}{2}, \frac{1}{2}\right)$

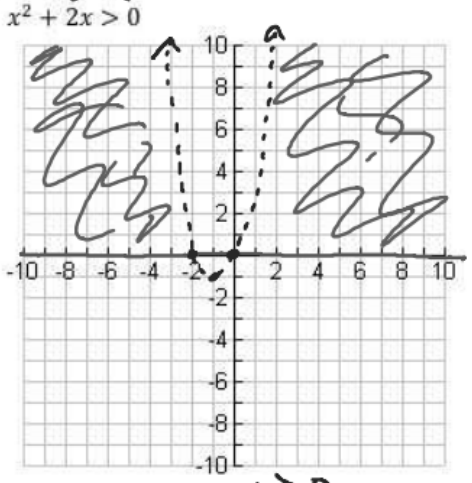
Graphing Quadratic Inequalities

1. **Graph the Curve**
2. **Dotted/Solid**
3. **Shade**

6. For each inequality:
   - Graph each inequality
   - Record the solution using symbols, interval notation, and a number line graph.

a. $x^2 + 2x > 0$

$a=1 \quad b=2$



opens up

$x = \frac{-b}{2a} = \frac{-2}{2(1)} = -1$

$(-1)^2 + 2(-1) =$

$1 - 2 = -1$

$V(-1, -1)$

y-intercept

$(0,0)$

x-intercepts

$x^2 + 2x = 0$

$x(x+2) = 0$

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

$x = -2$

$x < -2$ or $x > 0$

$(-\infty, -2) \cup (0, \infty)$

b. $n^2 + 2n - 24 \leq 0$