

$$52. \quad 9y^2 - 6y + 5 = 0$$

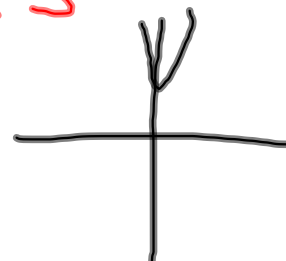
Describe the roots

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

$$D = (-6)^2 - 4(9)(5)$$

$$36 - 180 = -144$$

2 imaginary Roots



$$54. \quad (-8)^{2/3} = \left(\sqrt[3]{-8} \right)^2 = (-2)^2 = 4$$

$$55. \quad 16^{-3/4} = \frac{1}{16^{3/4}} = \frac{1}{(\sqrt[4]{16})^3} = \frac{1}{2^3} = \frac{1}{8}$$

$$57. \quad y = 2x + 5$$

a) line

b) y-int: 5

c) x-int: $y = 0$

$$0 = 2x + 5$$

$$\underline{-5 = 2x}$$

$$x = \frac{-5}{2} = -2.5$$

d) slope: $m = 2$

$$y = 2x + 5$$

$$y = -\frac{1}{2}x^2 + 4x - 6$$

a) vertical parabola

b) y-int: $x=0$

$$y = -\frac{1}{2}(0)^2 + 4 \cdot 0 - 6$$

$$\boxed{y = -6}$$

c) x-int: $y = -\frac{1}{2}x^2 + 4x - 6$

$$0 = -\frac{1}{2}x^2 + 4x - 6$$

$$a = -0.5 \quad b = 4 \quad c = -6$$

$$x = \frac{-4 \pm \sqrt{4^2 - 4(-0.5)(-6)}}{2(-0.5)}$$

$$x = \frac{-4 \pm \sqrt{4}}{-1} = \frac{-4 \pm 2}{-1}$$

$$x = \frac{-4 + 2}{-1}$$

$$x = \frac{-4 - 2}{-1}$$

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

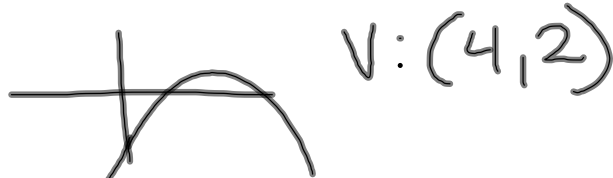
$$x = \frac{6}{-1} = 6$$

$$\boxed{x = 2, 6}$$

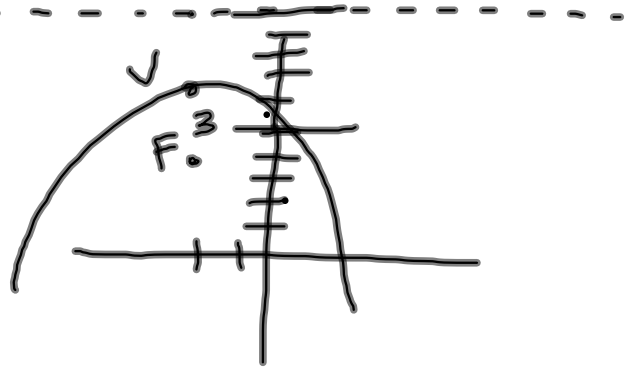
d) Vertex:

$$y = -\frac{1}{2}x^2 + 4x - 6$$

we have to use the calculator



60. $F(-2, 4)$
 $V(-2, 7)$



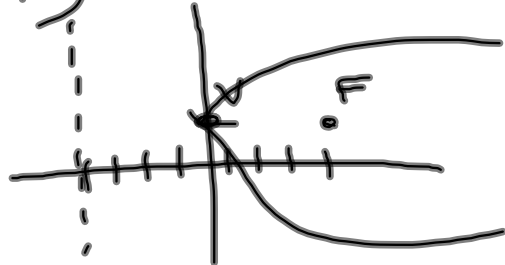
Directrix: $y = 10$

$y - k = a(x - h)^2$ or ~~$x - h = a(y - k)^2$~~

$$y - 7 = -\frac{1}{12}(x + 2)^2$$

$$a = \frac{1}{4c} = \frac{1}{4 \cdot 3} = \frac{1}{12}$$

61. $x = -4$ $F(4, 1)$
 $V(0, 1)$



$$x - h = a(y - k)^2$$

$$x - 0 = \frac{1}{16}(y - 1)^2$$

$$a = \frac{1}{4c} = \frac{1}{4 \cdot 4} = \frac{1}{16}$$

$$x = \frac{1}{16}(y - 1)^2$$