3.1 Quadratics: What are they?

① Vertex: max or min

(h, k)

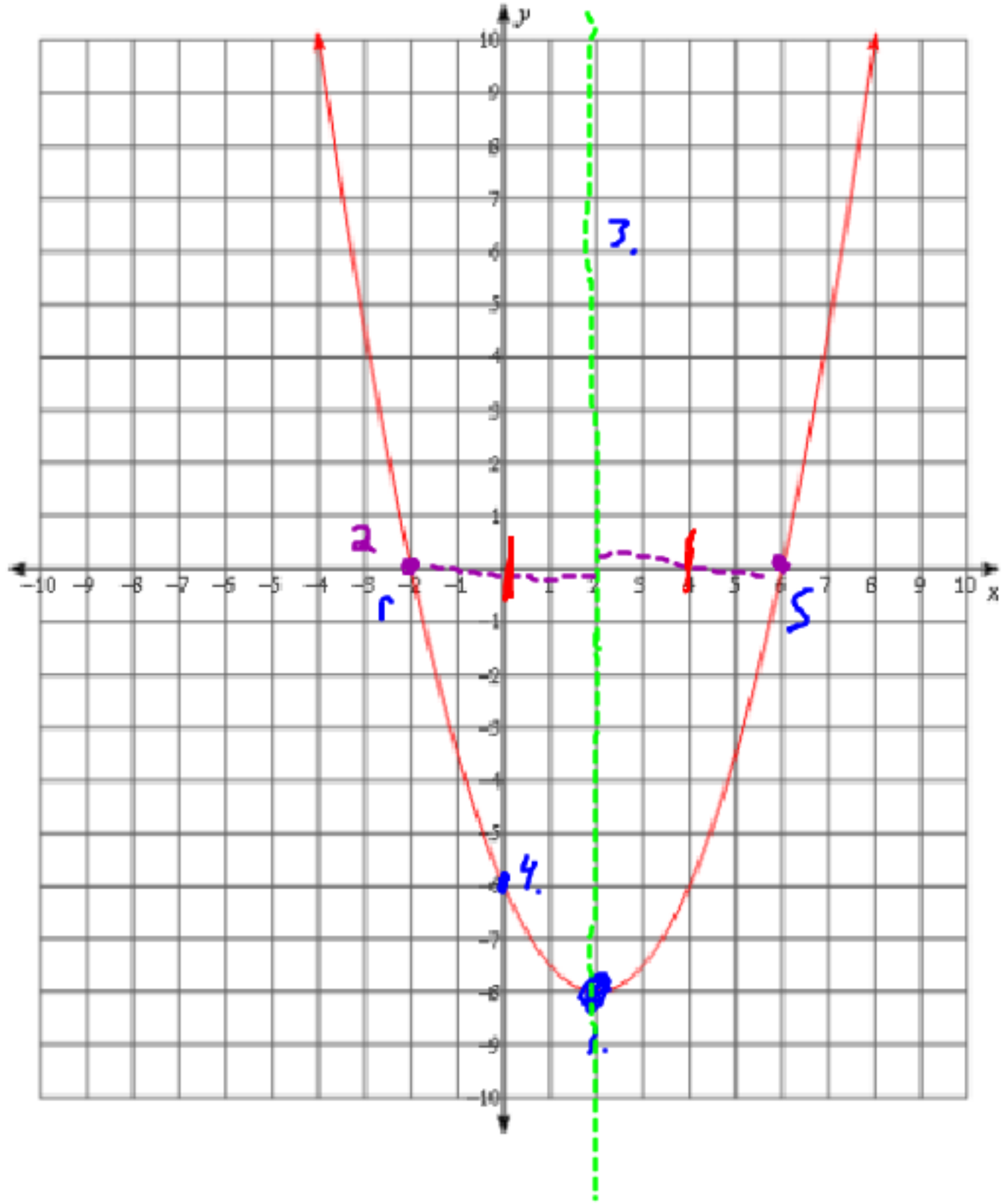
② x-intercept, zeros, roots, Solutions $x = r$, $x = s$

③ Axis of symmetry: $x = h$

$h = \frac{r+s}{2}$

④ y-intercept: $x = 0$

$y = c$



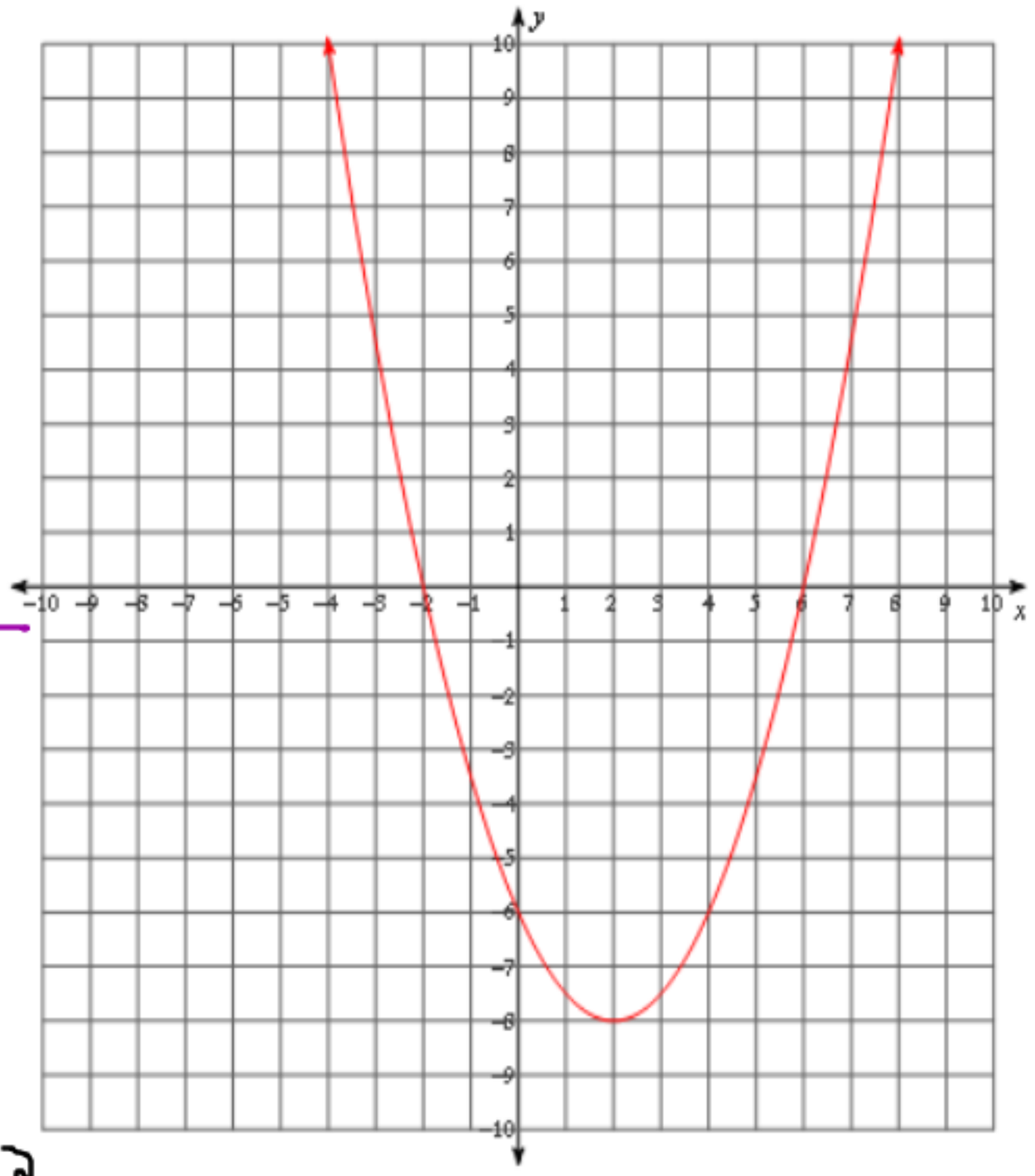
Equations of Quadratics:

Vertex Form: $f(x) = a(x-h)^2 + k$

Standard Form: $f(x) = ax^2 + bx + c$

Zeros Form: $f(x) = a(1x-r)(1x-s)$

What is the equation of the parabola?



Vertex: $(2, -8)$

zeros: $x = -2 \quad (-2, 0)$

$x = 6 \quad (6, 0)$

y-int: $(0, -6)$

vertex:

$f(x) = a(x-h)^2 + k$ use y-int

$-6 = a(0-2)^2 - 8$

$2 = 4a$

$\frac{1}{2} = a$ $\quad \therefore f(x) = \frac{1}{2}(x-2)^2 - 8$

Find the standard form:

Vertex: $(-6, 4)$ other $(\underset{x}{-5}, \underset{y}{1})$

$f(x) = a(x-h)^2 + k$

$1 = a(-5+6)^2 + 4$

$-3 = a$

$\therefore f(x) = -3(x+6)^2 + 4$

$f(x) = -3(x^2 + 12x + 36) + 4$

$f(x) = -3x^2 - 36x - 104$