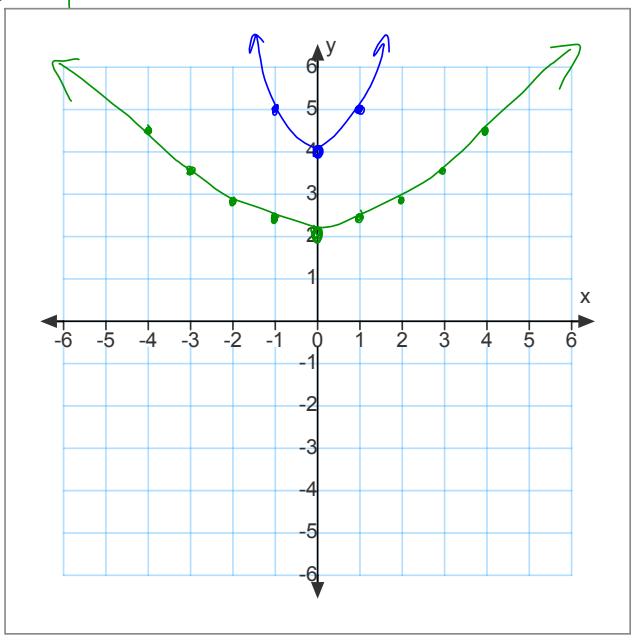
2.2 Square Root of a Quadratic Function

Investigate the following pairs of functions. Note the axes intercepts, D&R, invariant points, and the "end behaviour."

① $y = x^2 + 4$ & $y = \sqrt{x^2+4} \neq x+2$

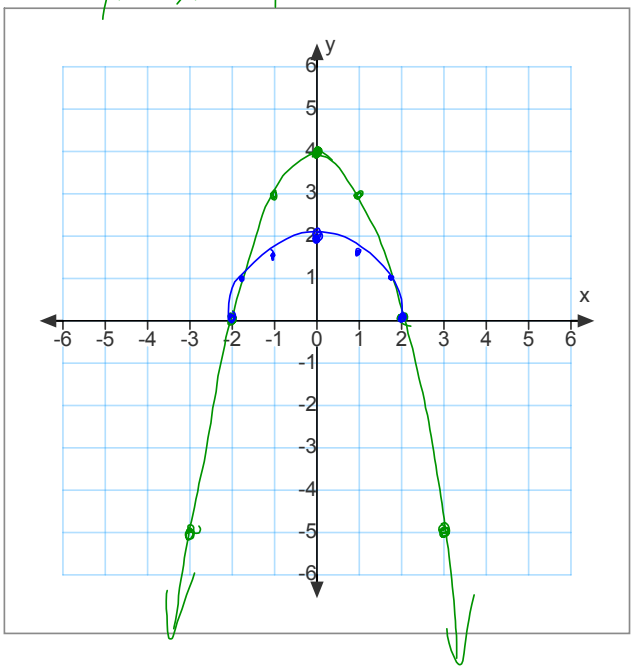


y-int = 4 y-int = $\sqrt{4} = 2$

D: $x \in \mathbb{R}$ R: $y \geq 4$ D: $x \in \mathbb{R}$ R: $y \geq \sqrt{4}$

② $y = 4 - x^2$ and $y = \sqrt{4 - x^2}$

$y = -x^2 + 4$



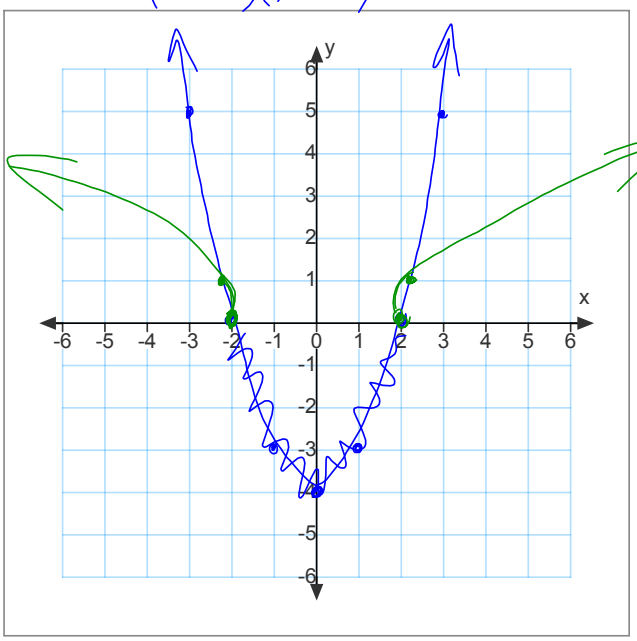
This is only defined when $4 - x^2 \geq 0$

$D: \{-2 \leq x \leq 2\}$

$R: \{0 \leq y \leq 2\}$

③ $y = x^2 - 4$ & $y = \sqrt{x^2 - 4}$

$(x-2)(x+2)$



D: $\{x \geq 2, x \leq -2\}$

R: $\{y \geq 0\}$

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