For the function: $f(x) = \frac{1}{2}x^2 - 8x$

a. Sketch the function

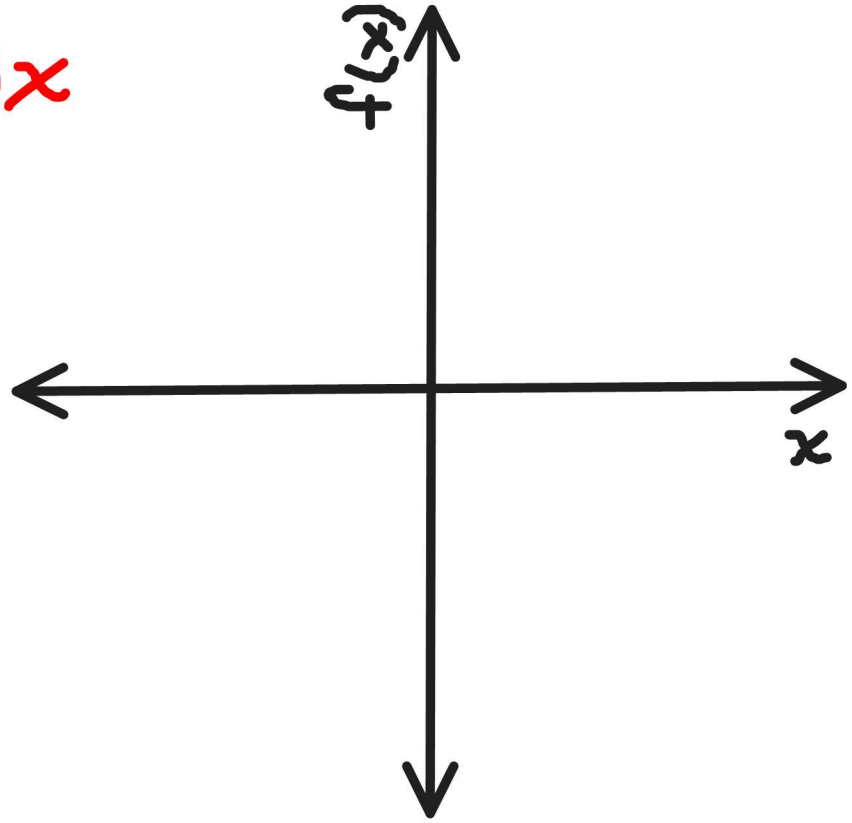
b. State the type of function

_____

c. Identify on the sketch and state the y-intercept here: (____ , _____)

d. Identify on the sketch and state here any vertex or local max / mins

(____ , _____) ; (____ , _____) ; ...



e. Identify the zeros (aka: roots, x-intercepts)

(____ , _____) ; (____ , _____) ; ...

f. State the domain and range:

Domain: { _____ < x < _____ }

Range: { _____ < f(x) < _____}

g. Indicate 'end behaviour' of the function

$x \to \infty, y \to$ ____

$x \to -\infty, y \to$ ____

h. discuss any symmetry

j. When does f(x) = 4?

For the function: $g(x) = x^3 - 5x$

a. Sketch the function

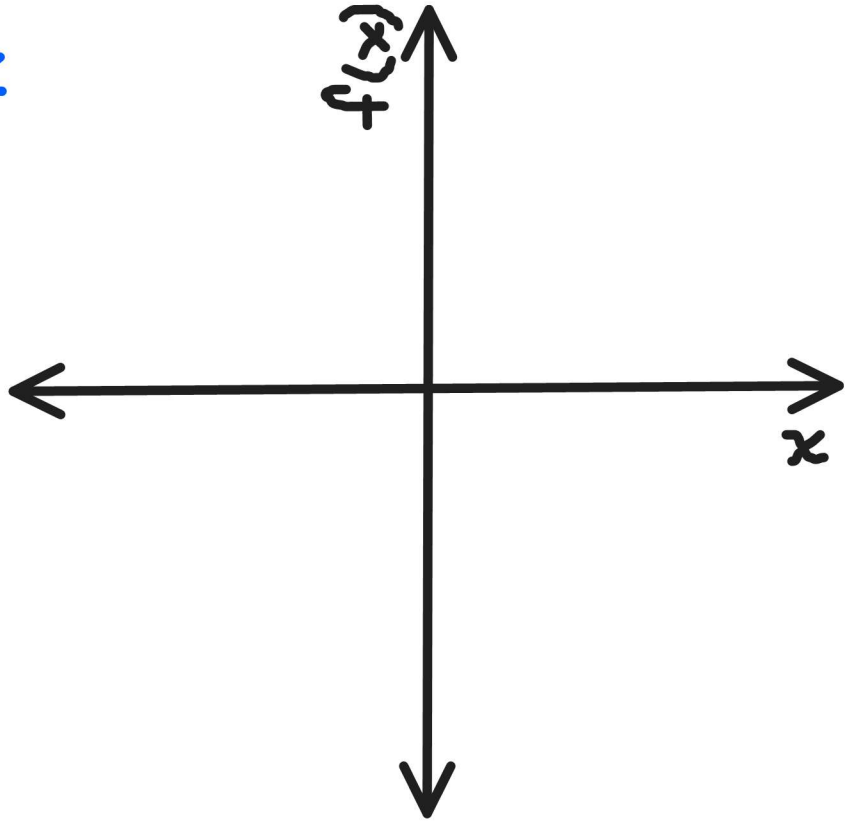
b. State the type of function

_____

c. Identify on the sketch and state the y-intercept here: (____ , _____)

d. Identify on the sketch and state here any vertex or local max / mins

(____ , _____) ; (____ , _____) ; ...



e. Identify the zeros (aka: roots, x-intercepts)

(____ , _____) ; (____ , _____) ; ...

f. State the domain and range:

Domain: { _____ < x < _____ }

Range: { _____ < f(x) < _____}

g. Indicate 'end behaviour' of the function

$x \to \infty , y \to$ ____

$x \to -\infty , y \to$ ____

h. discuss any symmetry

j. When does g(x) = 2?

For the function: $f(x) = \frac{1}{2}x^2 - 8x$

a. Sketch the function ✓

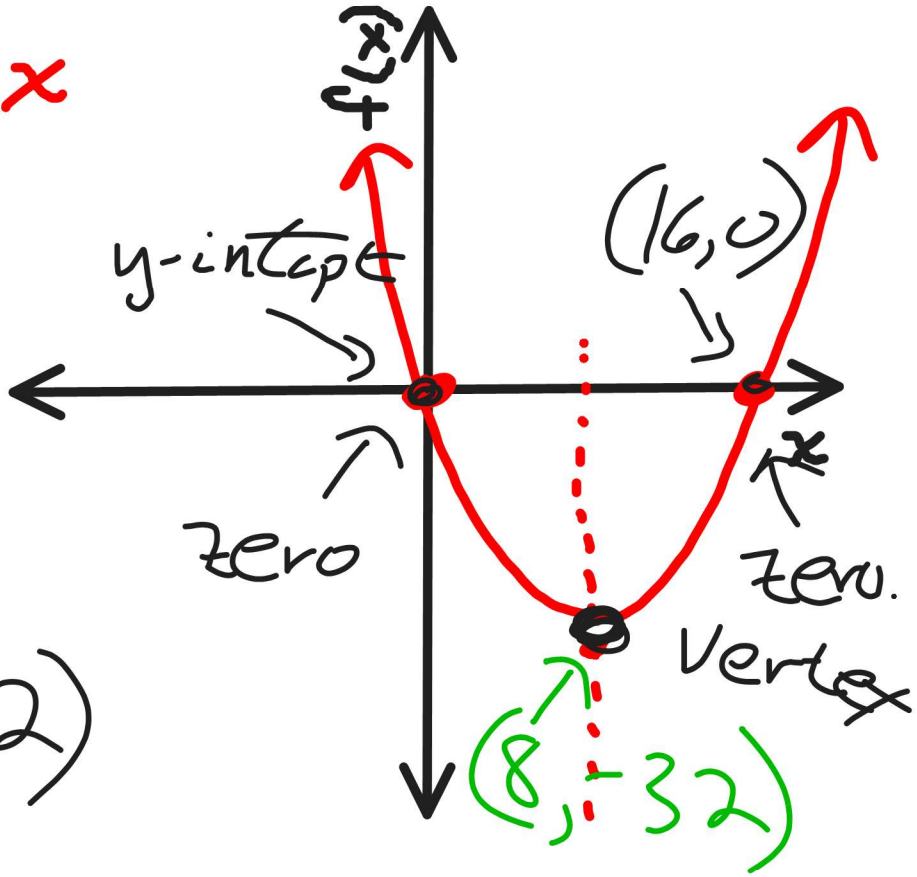
b. State the type of function

_____ quadratic

c. Identify on the sketch and state the y-intercept here: (0, 0) ORIGIN.

d. Identify on the sketch and state here any vertex or local max / mins

... (8, -32)



e. Identify the zeros (aka: roots, x-intercepts)

(0, 0) ; (16, 0); ...

f. State the domain and range:

Domain: { $-\infty$ < x < ∞ }

Range: { -32 ≤ f(x) < ∞ }

g. Indicate 'end behaviour' of the function

$x \to \infty, y \to +\infty$

$x \to -\infty, y \to +\infty$

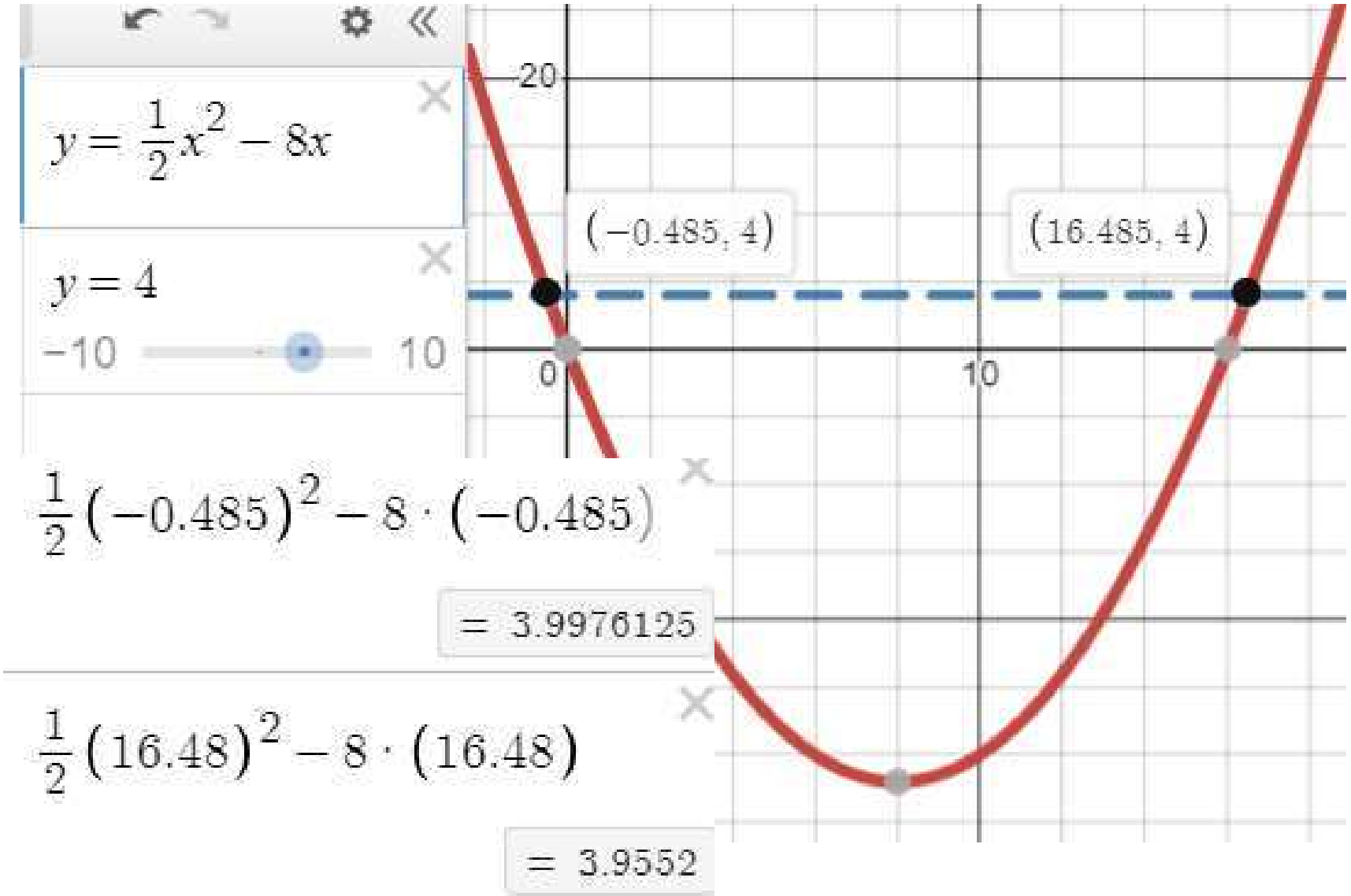
h. discuss any symmetry

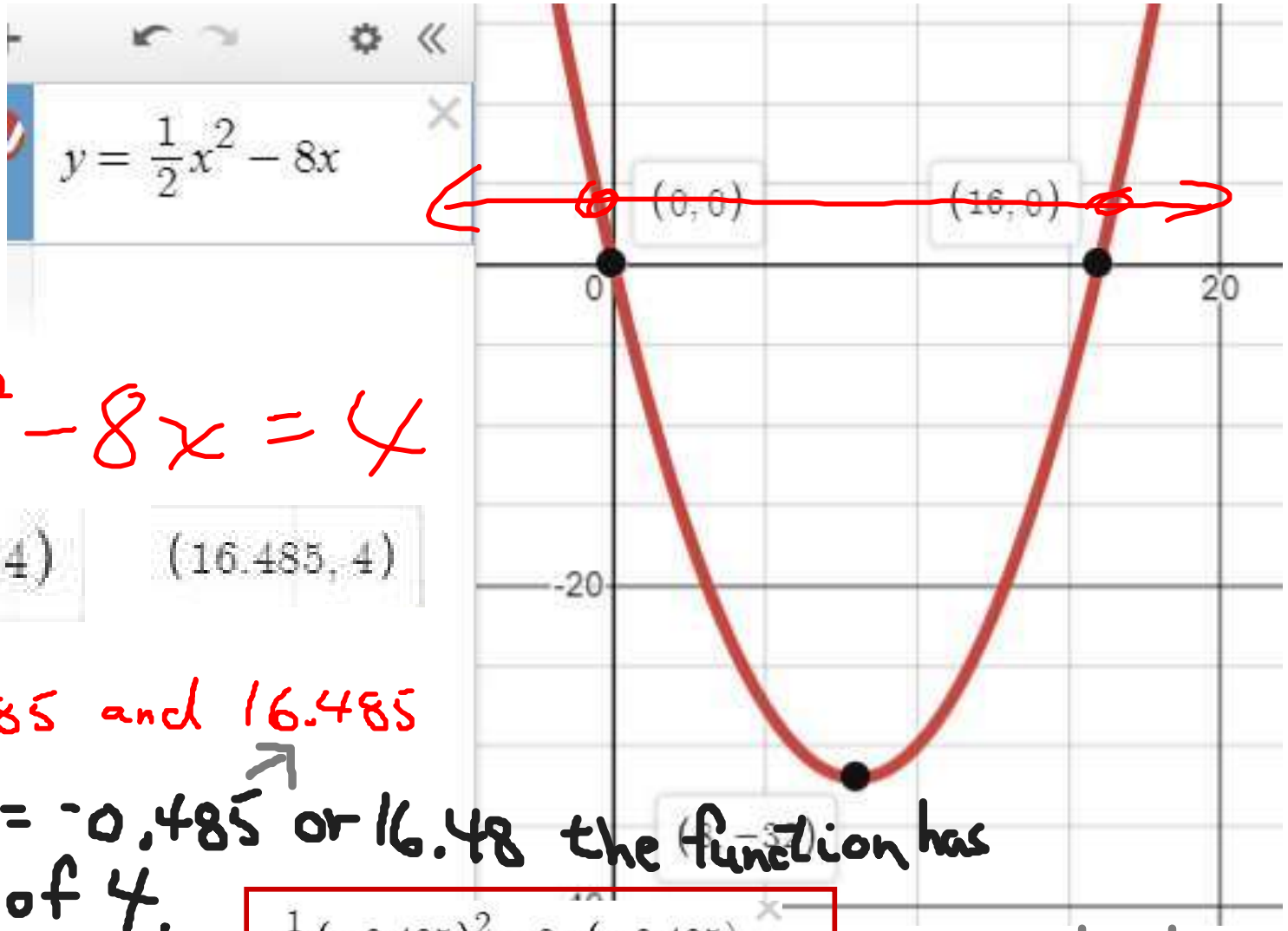
symmetric to left and right of axis of symmetry

j. When does f(x) = 4?

(next)

Solve for x: $\frac{1}{2}x^2 - 8x = 4$





$\frac{1}{2}x^2 - 8x = 4$

$(-0.485, 4)$ $(16.485, 4)$

$x = -0.485$ and 16.485

When $x = -0.485$ or 16.48 the function has a value of 4.

$\frac{1}{2}(-0.485)^2 - 8 \cdot (-0.485) = 3.9976125$

$\frac{1}{2}(16.48)^2 - 8 \cdot (16.48) = 3.9552$

Won't evaluate to exactly 4 since the solution is not exact

For the function: $g(x) = x^3 - 5x$

a. Sketch the function

b. State the type of function

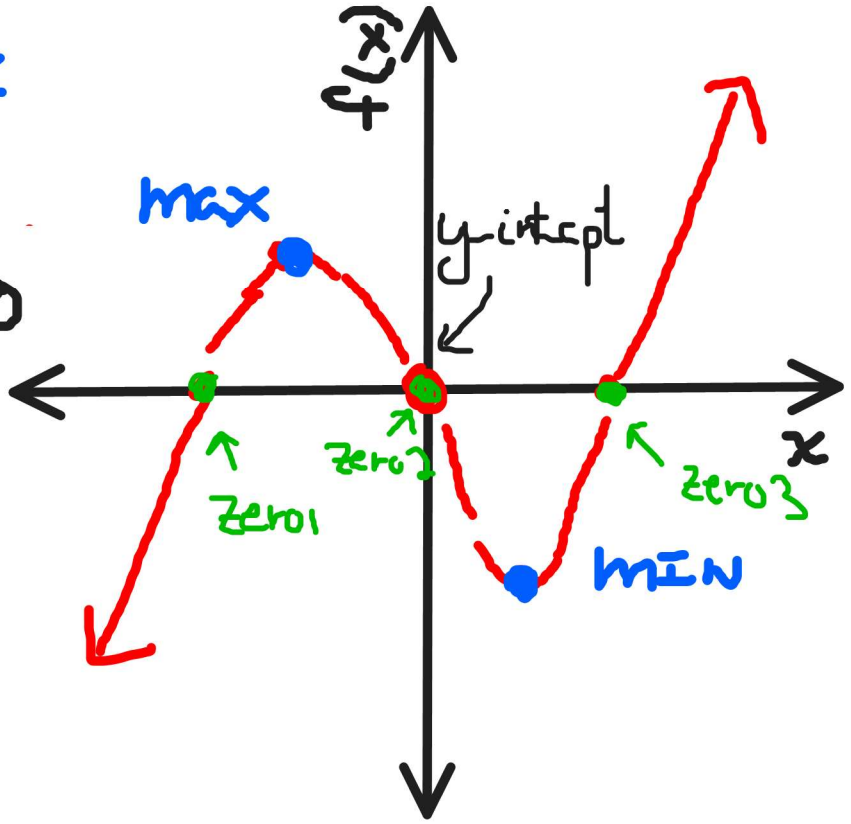
Cubic _____ $1x^3 + 0x^2 + -5x + 0$

c. Identify on the sketch and state the y-intercept here: (0 , 0) $g(0) = (0)^3 - 5(0)$

d. Identify on the sketch and state here any vertex or local max / mins

(1.29 , -4.30) ; (-1.29 , +4.30) ; ...

min



e. Identify the zeros (aka: roots, x-intercepts)

(-2.24 , 0) ; (0 , 0) ; (+2.24 , 0)

f. State the domain and range:

Domain: { $-\infty$ < x < $+\infty$ }

Range: { $-\infty$ < f(x) < $+\infty$ }

g. Indicate 'end behaviour' of the function

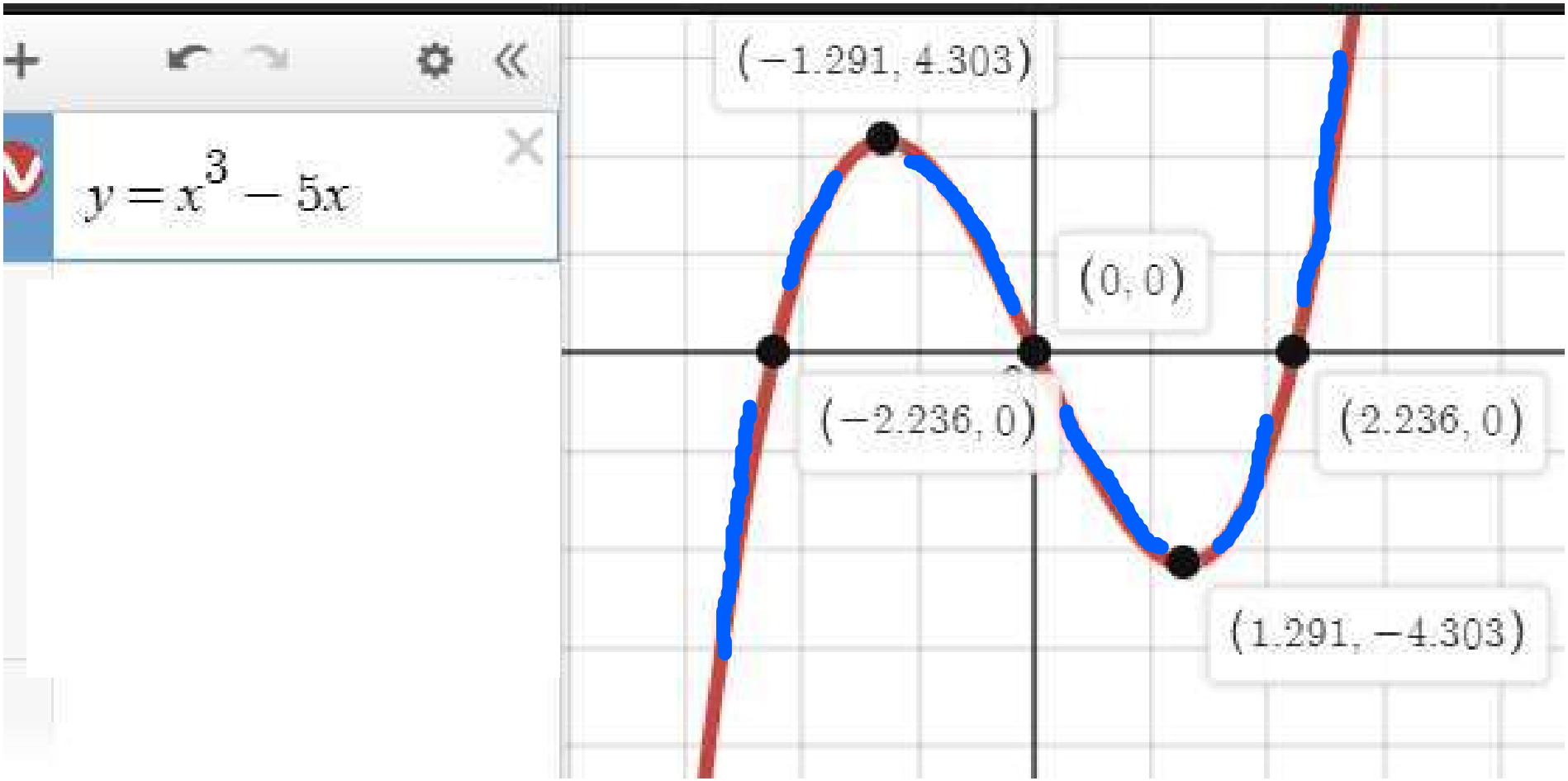
$x \to \infty, y \to +\infty$

$x \to -\infty, y \to -\infty$

h. discuss any symmetry

rotational symmetry

j. When does g(x) = 2?



Curious!?

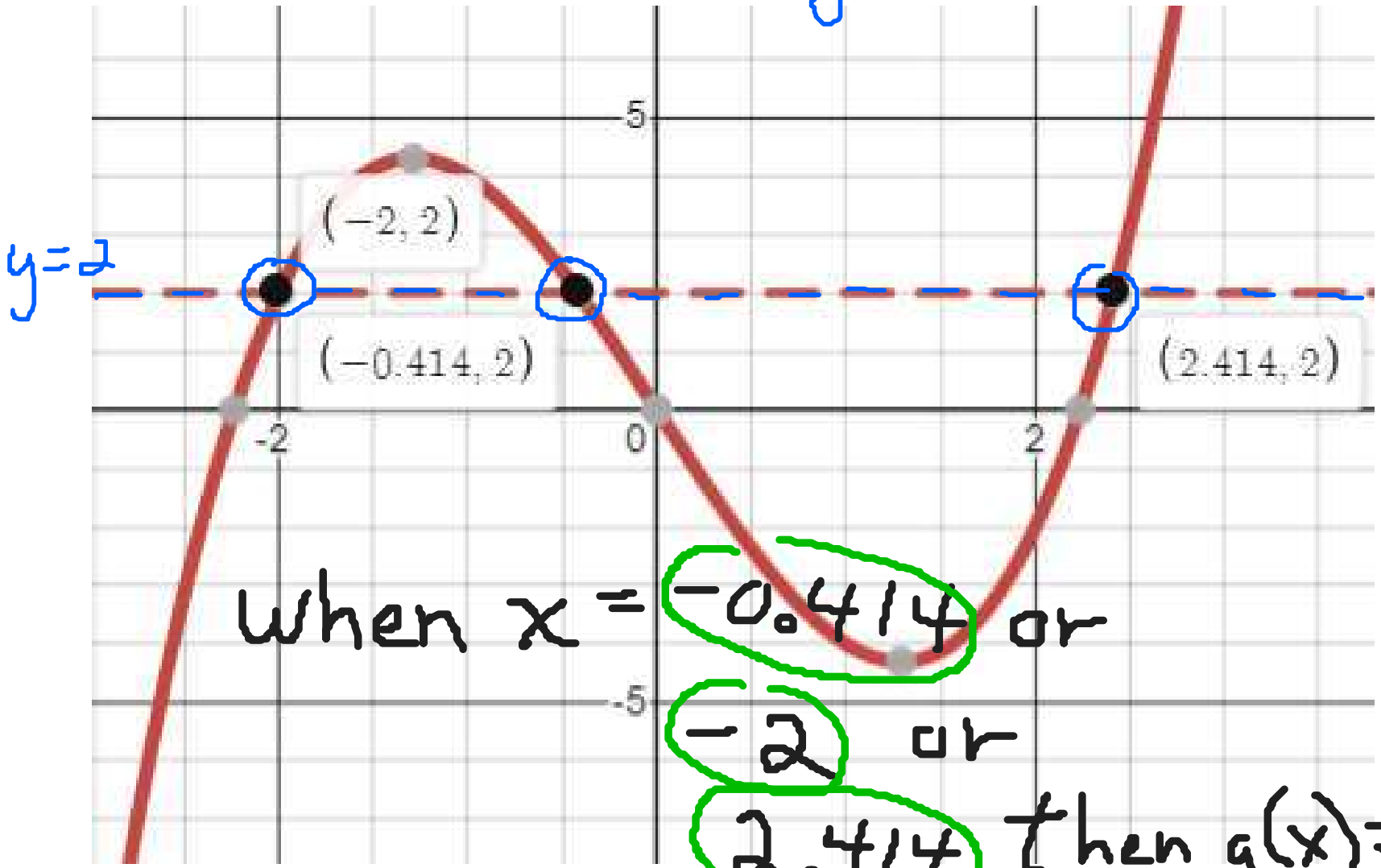
Seems symmetrical

remember Grade 10 Transforms?

rotating shapes?

$g(x)$

Solve: $g(x) = 2$



when $x = -0.414$ or -2 or 2.414 then $g(x)=2$