GRAPHING REVIEW

Symmetry

x-axis: sub in $-y$ ⎫
y-axis   sub in $-x$ ⎬ must result in original function
Origin: sub in $-x, -y$ ⎭

1(e) $x^{2/3} + y^{2/3} = 4^{2/3}$

$$\sqrt[3]{x^2} + \sqrt[3]{y^2} = \sqrt[3]{16}$$

x-axis $\sqrt[3]{x^2} + \sqrt[3]{(-y)^2} = \sqrt[3]{16}$
yes
$\sqrt[3]{x^2} + \sqrt[3]{y^2} = \sqrt[3]{16}$

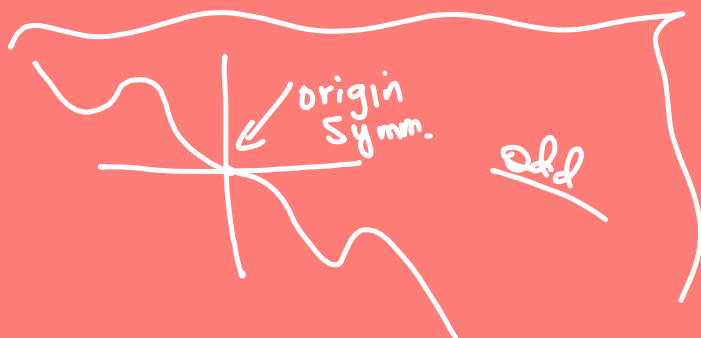y-axis $\sqrt[3]{(-x)^2} + \sqrt[3]{y^2} = \sqrt[3]{16}$
yes

origin $\sqrt[3]{(-x)^2} + \sqrt[3]{(-y)^2} = \sqrt[3]{16}$
yes

Even/Odd Functions

Even $f(-x) = f(x)$ y-axis
Odd $f(-x) = -f(x)$ origin

$f(x) = \dfrac{x^6}{-x^3 + x}$

$f(-x) = \dfrac{x^6}{-(-x)^3 + (-x)}$

$\dfrac{x^6}{x^3 - x}$

$= -\dfrac{x^6}{(-x^3) + x}$

odd

origin
symm.

Odd

Relative min.
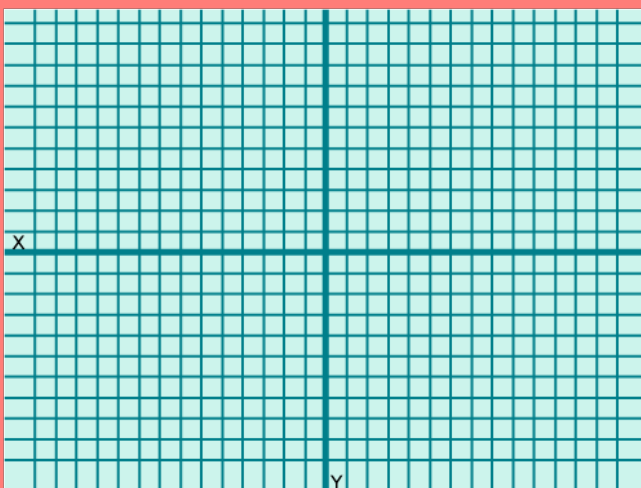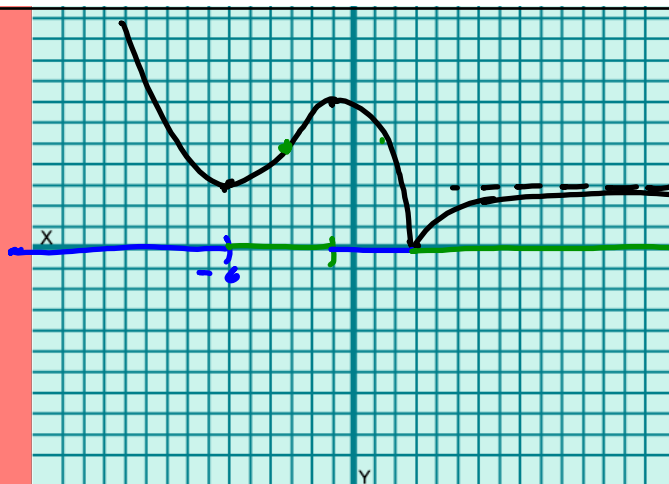$(-6, 3)$ $(3, 0)$

Rel max
$(-1, 7)$

Abs min
$(3, 0)$

Abs max
none

Inc
$(-6, -1)$ $(3, \infty)$

Dec
$(-\infty, -6)$ $(-1, 3)$

Like #4

$f(x) = 2x^2 - 4x - 7$

Vertex: $x = \dfrac{+ + 4}{2(2)} = 1$

$y = 2(1)^2 - 4(1) - 7$

$= 2 - 4 - 7 = -9$

$\boxed{(1, -9)}$

X-intercepts

$0 = 2x^2 - 4x - 7$

$(x, 0)$

$(0, y)$

$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$= \dfrac{4 \pm \sqrt{16 + 4(2)(7)}}{2(2)}$

$= \dfrac{4 \pm \sqrt{16 + 56}}{4}$
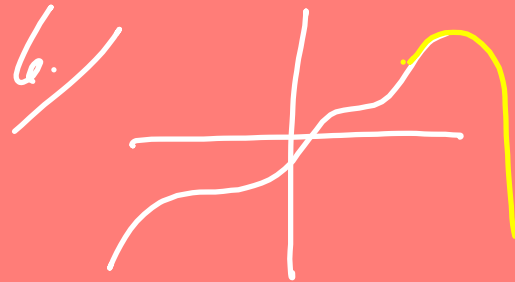
$\dfrac{4 \pm \sqrt{72}}{4}$ ← 36.2

$\dfrac{4 \pm 6\sqrt{2}}{4}$

$= \dfrac{2 \pm 3\sqrt{2}}{2}$

$\left(\dfrac{2 + 3\sqrt{2}}{2}, 0 \right) \left(\dfrac{2 - 3\sqrt{2}}{2}, 0 \right)$

5/ $\left.\begin{array}{c} f \circ g \\ or \\ g \circ f \end{array}\right\} = x$

6.

Must pass horiz. line
tool

$f(\cancel{x}) = \dfrac{4x-7}{2x+3}$

$(2y+3)x = \dfrac{4y-7}{2y+3} \cancel{(2y+3)}$

$2xy + 3x = 4y - 7$

$2xy - 4y = -3x - 7$

$y(2x-4) = -3x - 7$

$y = \dfrac{-3x-7}{2x-4}$