GRAPHING REVIEW

Symmetry

x-axis	sub in $-y$
y-axis	sub in $-x$
origin	sub in $-x$ and $-y$

must get original equation

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

$$\sqrt[3]{x^2} + \sqrt[3]{y^2} = \sqrt[3]{4^2}$$

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

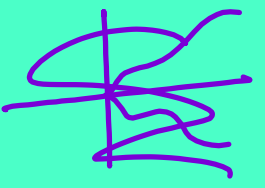
y-axis $\sqrt[3]{(+x)^2} + \sqrt[3]{y^2} = \sqrt[3]{16}$ yes

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)



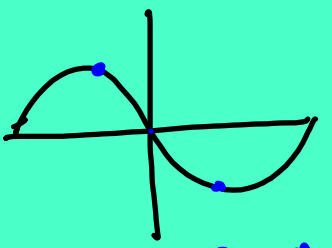
$$f(x) = \frac{x^3 - 2x}{x^2 + 1}$$

$$f(-x) = \frac{(-x)^3 - 2(-x)}{(-x)^2 + 1}$$

$$= \frac{-x^3 + 2x}{x^2 + 1}$$

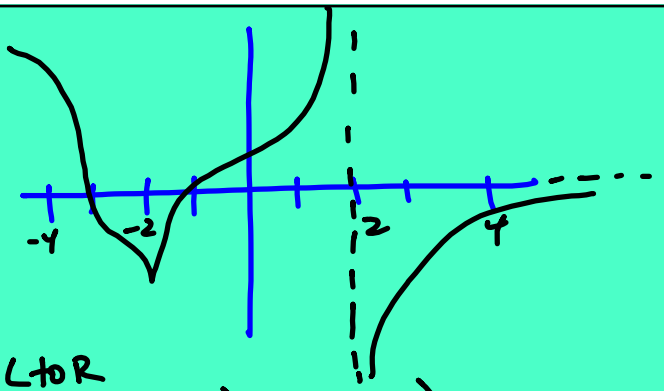
$$= -\frac{x^3 - 2x}{x^2 + 1}$$

odd



Origin Symm.

$\therefore$ odd



L to R

Inc $(-2, 2)$ $(2, \infty)$

Dec $(-\infty, -2)$

Use x-coordinates!

4/

$f(x) = x^2 - 7x - 9$

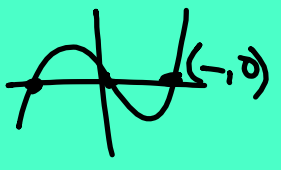
Vertex: $x = \frac{-b}{2a} = \frac{7}{2(1)} = \frac{7}{2}$

$y = \left(\frac{7}{2}\right)^2 - 7\left(\frac{7}{2}\right) - 9$

$= \frac{49}{4} - \frac{49}{2} - 9$

$= \frac{49}{4} - \frac{98}{4} - \frac{36}{4}$

$= -\frac{85}{4}$ $\left(\frac{7}{2}, -\frac{85}{4}\right)$



x-int: $y = 0$

~~$0 = x^2 - 7x - 9$~~

$0 = x^2 - 9x + 14$

$(x - 7)(x - 2)$

x-int $(7, 0)(2, 0)$

Inverses

5) Are $f(x) = \frac{1}{2}x^2 - 4$ & $g(x) = \sqrt{2x+8}$ inverses?

$(f \circ g) = \frac{1}{2}\left(\sqrt{2x+8}\right)^2 - 4$

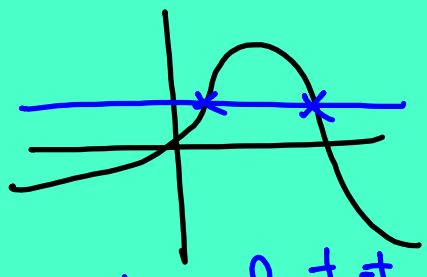
$= \frac{1}{2}(2x+8) - 4$

$= x + 4 - 4$

$= x$

yes, f & g are inverses!

6)



No, f^{-1} will not be a function.

Use horiz. line test

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7) Switch x's & y's
Solve for y

b & c = Graph f & f^{-1}

They should reflect over $y = x$

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Asymptotes

Vertical

Denom = 0

Horizontal

Use highest power of from num & denom.

Slant

When num. is one power higher

Find: long division

Holes

When terms cancel from num & denom.