

Radicals

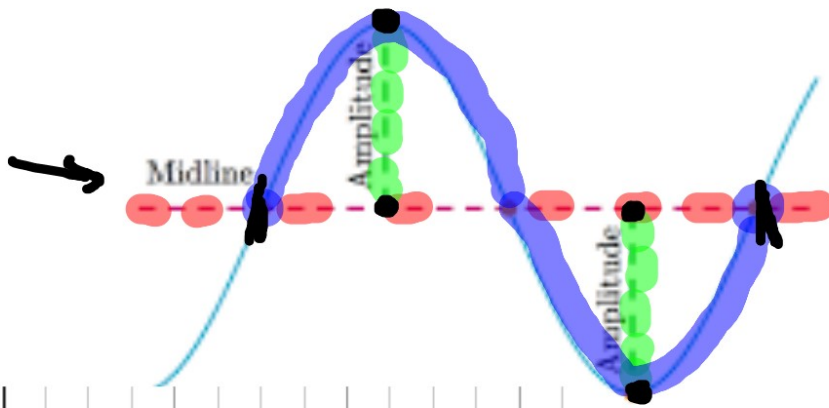
$$\sqrt[n]{x^b} = x^{b/n}$$

index \swarrow \circlearrowleft \swarrow x^b \swarrow \swarrow $x^{b/n}$ \swarrow \swarrow \swarrow \swarrow
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$$\sqrt[4]{x^3} = x^{3/4}$$

$$\sqrt[4]{x^{-1}} = x^{-1/4}$$

$$\left(\sqrt{x^5}\right)^2 = x^5$$



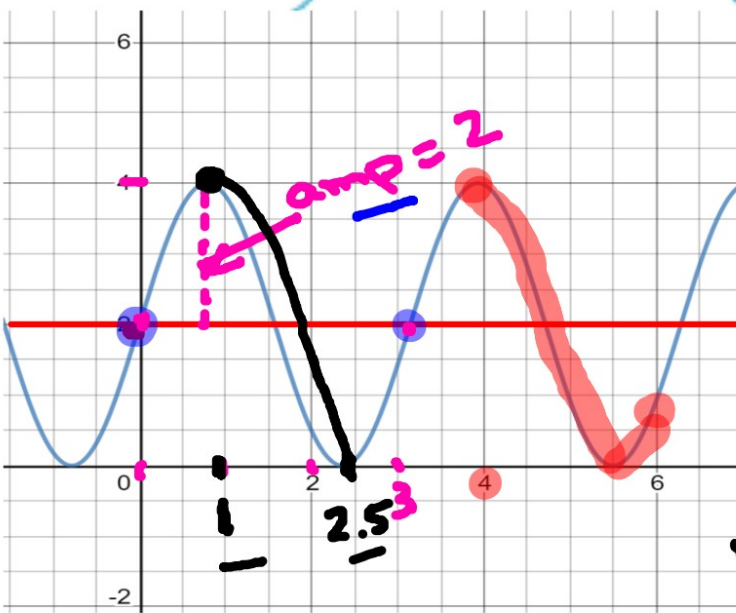
$\pi = 3.14$

AMP IS 2

PERIOD IS π

~~X~~ Midline is $y = 4$

~~X~~ Function increases $4 < x < 6$



$y = 2$
MIDLINE

✓ DECREASE FROM 1 to 2.5

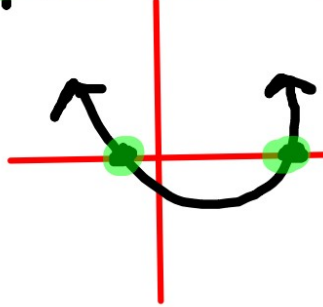
Absolute Value



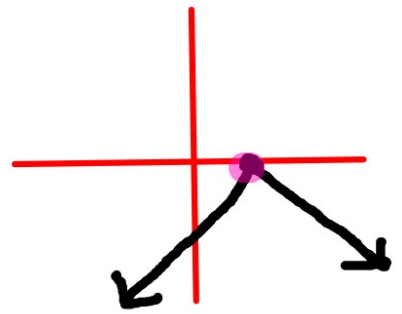
Quadratic



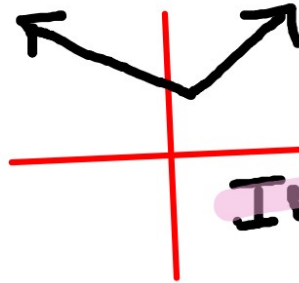
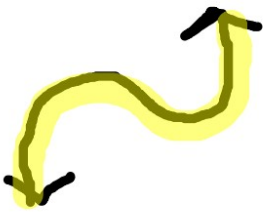
TWO REAL ROOTS



ONE REAL ROOT



Cubic



IMAGINARY ROOTS

Arithmetic : ADD / SUBTRACT
THE SAME #

Geometric : MULTIPLY BY
THE SAME #

EX: $5, 10, 15, 20, 25, \dots$ ^{+5 +5 +5 +5} Arithmetic

EX: $4, 8, 16, 32, \dots$ ^{$\times 2 \times 2 \times 2$} Geometric

$$f(x) = x^2 + c \quad \text{up}$$

$$f(x) = x^2 - c \quad \text{down}$$

$$f(x) = (x - c)^2 \quad \text{right}$$

$$f(x) = (x + c)^2 \quad \text{left}$$

Imaginary #'s

* Any # with (i) in it is imaginary.

* i² = -1 (REAL)

Ex: $(8i)(i) = \underline{8i^2} = 8(\underline{-1}) = -8$ REAL

Ex: $-3(2+4i) = -6 - 12i$ IMAGINARY
NON-REAL

$$6i(4i + 2) = 24i^2 + 12i$$
$$= 24(-1) + \underline{\underline{12i}}$$

EX: $(10i)(i)$

$$10i^2 = 10(-1) = \underline{\underline{-10}}$$

Real

↑
NON
REAL

