

Pg 109
 Unit 2, 7 Parent Functions + Transformations

Constant function Identity function Abs. func.

$y=c$ $y=x$ $y=|x|+c$

$y=x^2$ Quadratic

$y=x^2$

TRANSFORMATIONS: moving up, down, left or right

EX #1: $y=|x|+2$

$y = a(x-h)^2 + k$

wide > | narrow < | wide < |

+ upward - downward

Right < - Left > |

up < - down > |

vertex (h, k)

EX 2A: $y=|x+3|+0$

(-3, 0)

EX 2B: $y=x^2-4$

$y=(x-0)^2-4$

(0, -4)

EX #3: $y=-x^2+0$

$y=-1(x-0)^2+0$

3A: $y=-|x|$

$y=-|x-0|+0$

3B: $y=-x$

$y=-\frac{1}{1}x+0$

4A: $y=2x^2$

$y=2(x-0)^2+0$

narrow

4B: $y=\frac{1}{3}|x|$

$y=\frac{1}{3}|x-0|+0$

wide

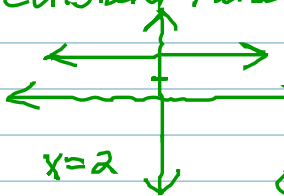
Hard: $y=2(x-2)^2+1$

Hard: $y=2(x+1)^2$

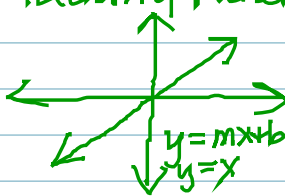
wide

Unit 2.7 Parent Functions + Transformations

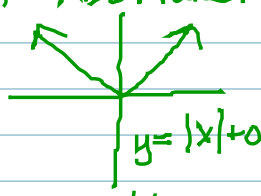
Constant function



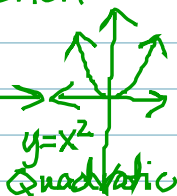
Identity function



Abs. func.



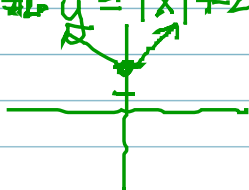
$y=x^2$
Quadratic



$y=mx+b$
 $y=x$

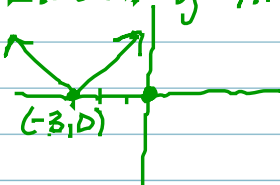
TRANSFORMATIONS: moving up, down, left or right

EX #1: $y=|x|+2$

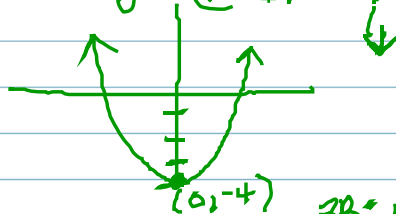


$y = a(x-h)^2 + k$
 $a > 1$ narrow
 $a < 1$ wide
 $a > 0$ upward
 $a < 0$ downward
 Right ← vertex (h, k)
 Left ← vertex (h, k)

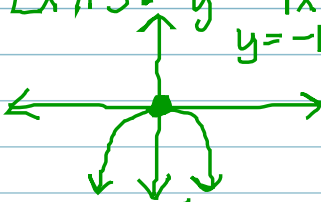
EX 2A: $y=|x+3|+0$
 $h = -3$
 $k = 0$



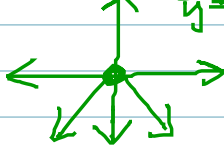
EX 2B: $y=x^2-4$
 $h = 0$
 $k = -4$



EX #3: $y=-|x^2|+0$
 $y=-1(x-0)^2+0$



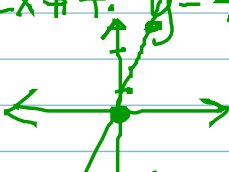
3A: $y=-|x|$
 $y=-1(x-0)+0$



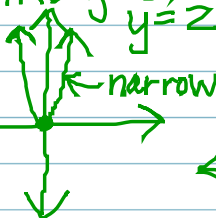
3B: $y=-x$
 $y=-1(x+0)+0$



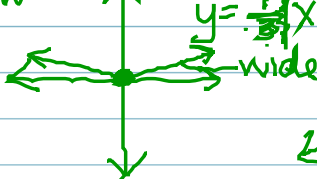
EX #4: $y=4x+0$



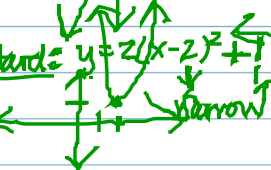
4A: $y=2x^2$
 $y=2(x-0)^2+0$
 narrow



4B: $y=\frac{1}{3}|x|$
 $y=\frac{1}{3}|x-0|+0$
 wide



Hard: $y=2(x-2)^2+1$
 narrow



Hard: $y=\frac{1}{2}|x+1|+2$
 wide

