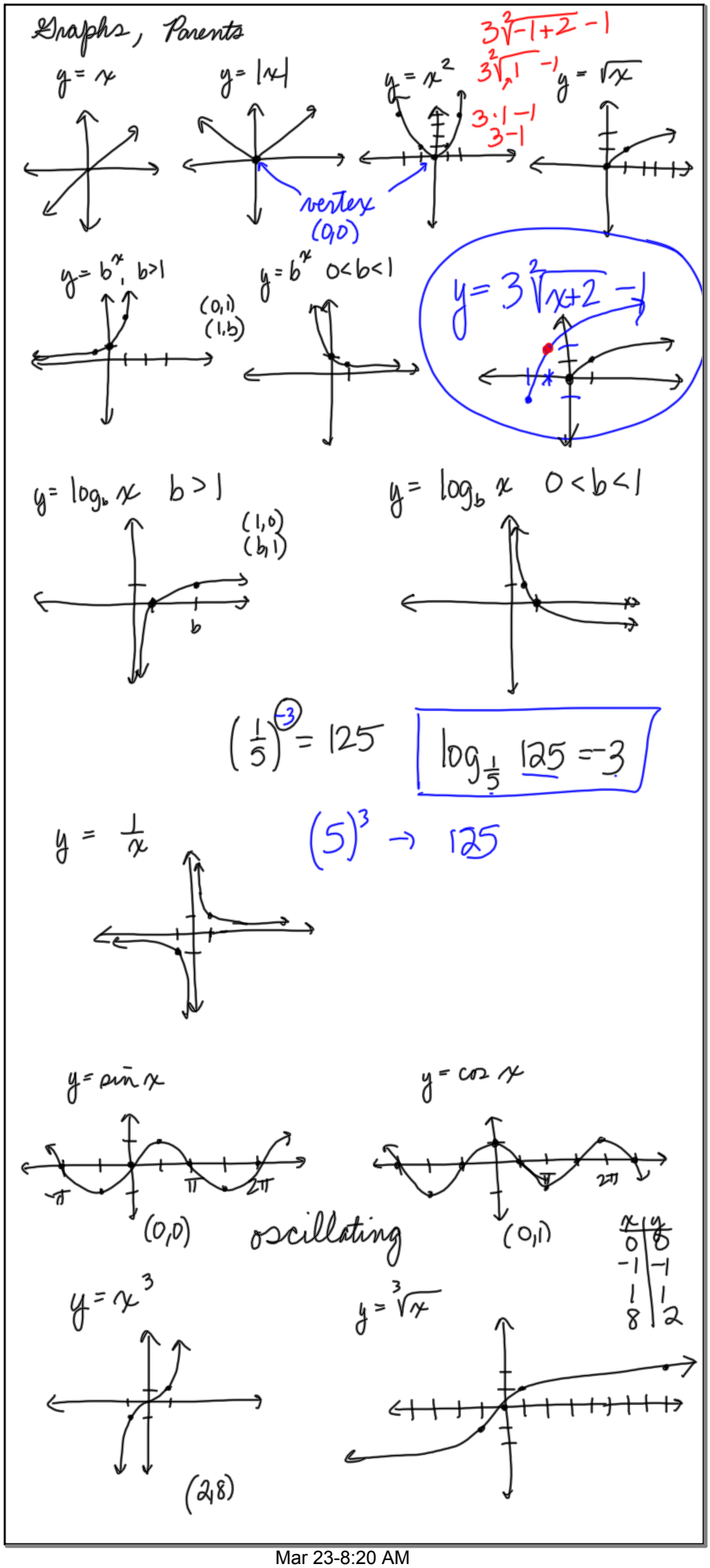

Graphs, Parents
y = x
y = |x|
y = x²
y = √x
vertex (0,0)
3·1 −1
3 −1
y = b^x, b>1
(0,1)
(1,b)
y = b^x 0<b<1
y = 3√(x+2) − 1
y = log_b x b>1
(1,0)
(b,1)
b
y = log_b x 0<b<1
(1/5)^(−3) = 125
log_(1/5) 125 = −3
y = 1/x
(5)³ → 125
y = sin x
y = cos x
(0,0)
oscillating
(0,1)
x | y
0 | 0
−1 | −1
1 | 1
8 | 2
y = x³
y = ∛x
(2,8)

Mar 23-8:20 AM

Transformations

$y = f(x + a)$ → left a units ($a > 0$)

opp.

$y = f(x - a)$ → right a units

$y = f(x) + k$ ($+k$, $-k$)

- $k > 0$ up k units $f(x) + k$
- $k < 0$ down k units $f(x) - k$

$y = -f(x)$ → reflection over x-axis (flip)

$y = af(x)$

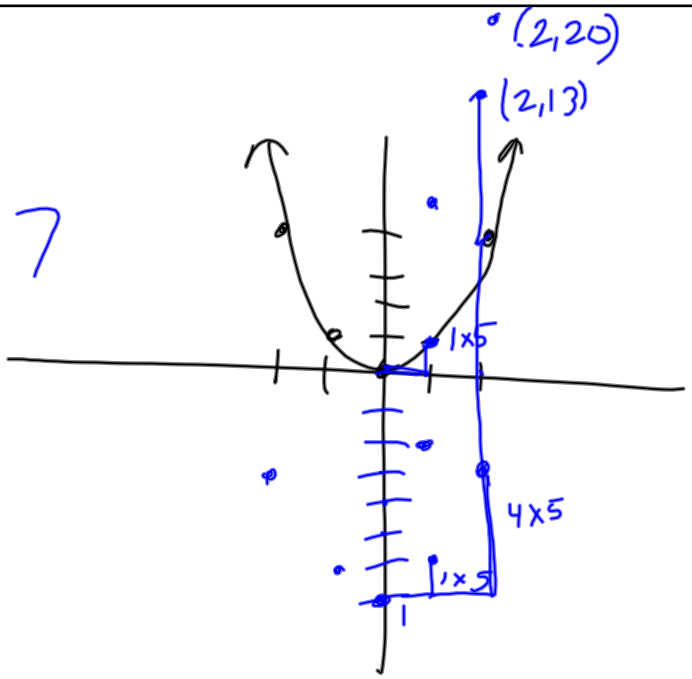
- $a > 1$ vertically stretched by a factor a
- $0 < a < 1$ vertically compressed by a factor a

$y = f(ax)$

- $a > 1$ horizontally compressed by a factor $\frac{1}{a}$
- $0 < a < 1$ horizontally stretched by a factor $\frac{1}{a}$

$y = x^2$

$y = 5x^2 - 7$



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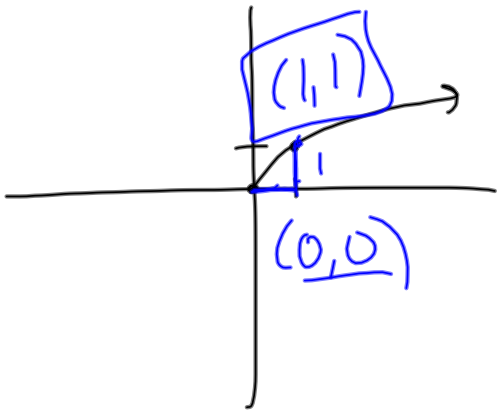

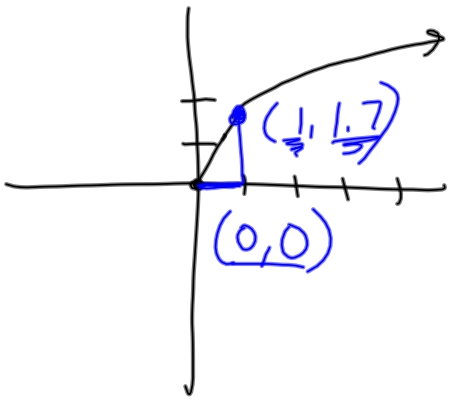

a. $y = 3\sqrt{x}$ — $3 \cdot \sqrt{1} = 3$

b. $y = \frac{1}{3}\sqrt{x}$ $\frac{1}{3} \cdot \sqrt{1} = \frac{1}{3}$

c. $y = \sqrt{3x}$ $\sqrt{3 \cdot 1} = \sqrt{3} < 1.7$

d. $y = \sqrt{\frac{1}{3}x}$ $\sqrt{\frac{1}{3} \cdot 1} = \sqrt{\frac{1}{3}} < \frac{1}{3}$

Mar 23-12:49 PM