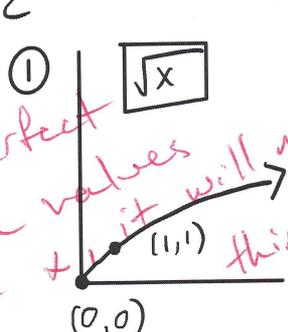Jade Guenigault
writing project #2
Math 1340

① $5\sqrt{3x-21} - 2 = 5\sqrt{3(x-7)} - 2$

① $\boxed{\sqrt{x}}$

Use perfect square values of x, it will make a lot of things easier.

(1,1)
(0,0)

② $\boxed{5\sqrt{x}}$

(2,7.07)
(1,5)   (4,10)
(0,0)

$\dfrac{34.5}{50}$

③ $\boxed{5\ \sqrt{3x}}$

(2, $\frac{49}{4}$)
(1, 8.66)
(0,0)

④ $\boxed{5\sqrt{3(x-7)}}$

(9, $\frac{49}{4}$)
(8, 8.66)
(7,0)

⑤

(9, $\frac{41}{4}$)
(8, 6.66)
(7, -2)
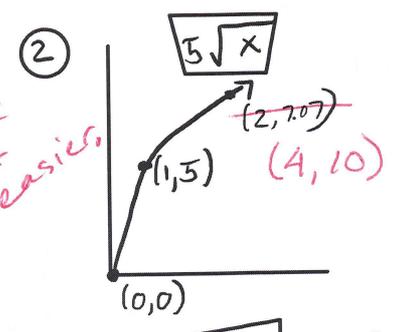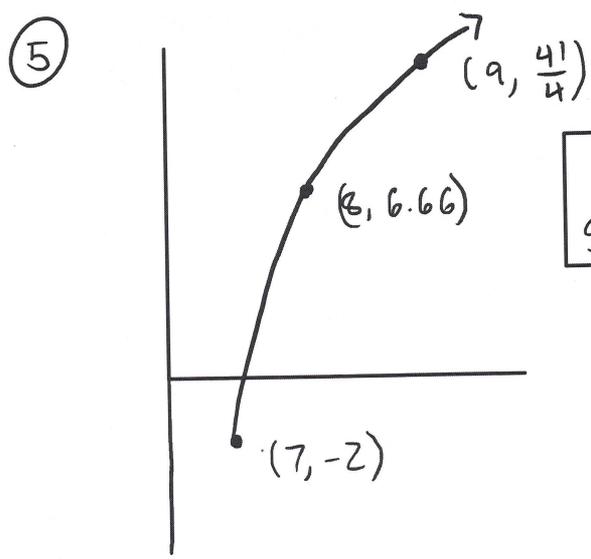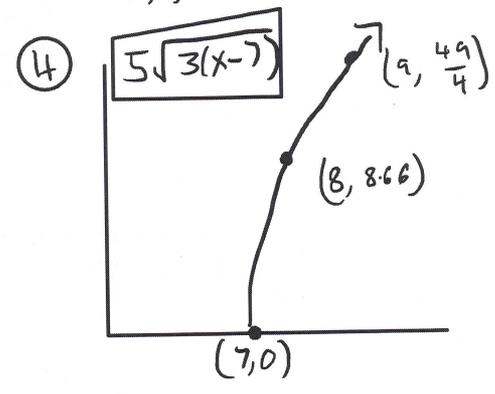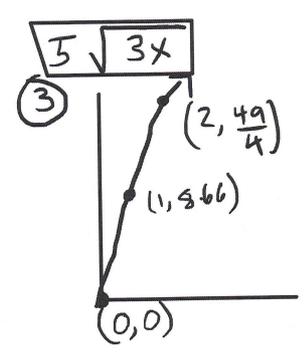
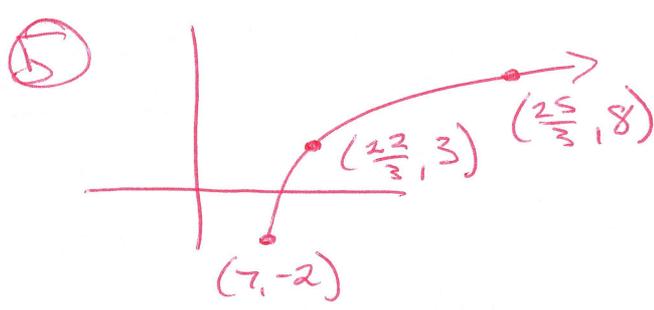$\boxed{g(x) = 5\sqrt{3x - 21} - 2}$

shifted right
7 units

down 2 units

stretched
vertically

Ends up being...

⑤

($\frac{23}{3}$, 3)   ($\frac{25}{3}$, 8)
(7, -2)
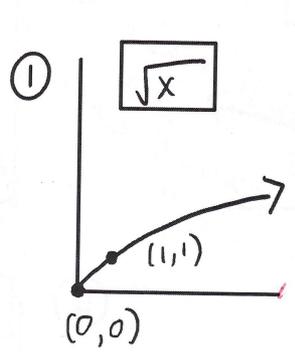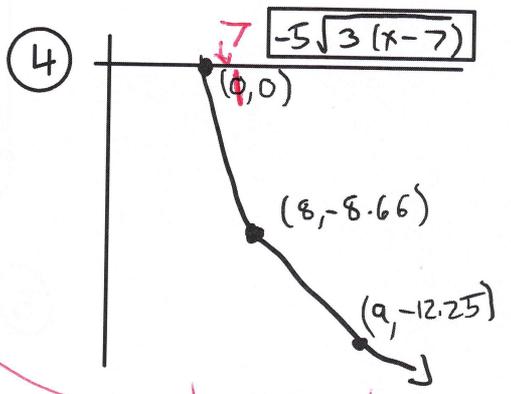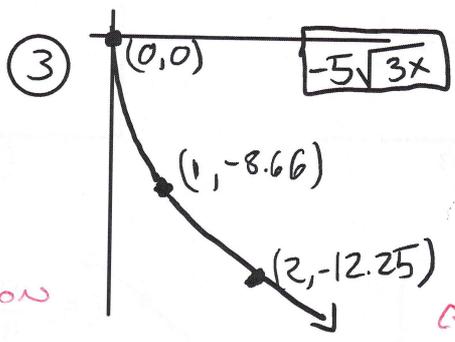
+4.5

Jade Guenigault
writing project #2
Math 1340

② $g(x) = -5\sqrt{3x - 21} + 2 = -5\sqrt{3(x-7)} + 2$

① $\boxed{\sqrt{x}}$

(1,1)
(0,0)

② $\boxed{-5\sqrt{x}}$

(0,0)
(1,-5)
(2,-7.07)

not graded
no reference

③ $\boxed{-5\sqrt{3x}}$

(0,0)
(1,-8.66)
(2,-12.25)

④ $\boxed{-5\sqrt{3(x-7)}}$

(0,0)
(8,-8.66)
(9,-12.25)

Misstep on the shrink
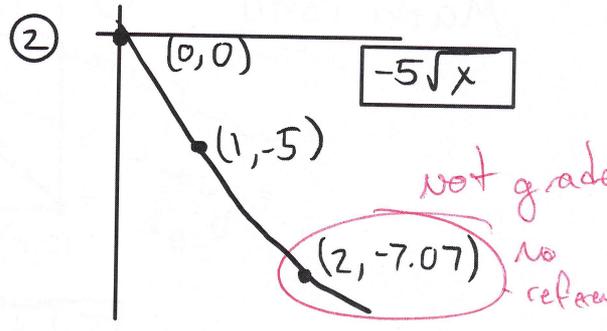
If you keep to x's that are perfect squares ie: 1, 4, 9 ... so on it is a **lot** easier to get exact y's w/o a calculator! ☺
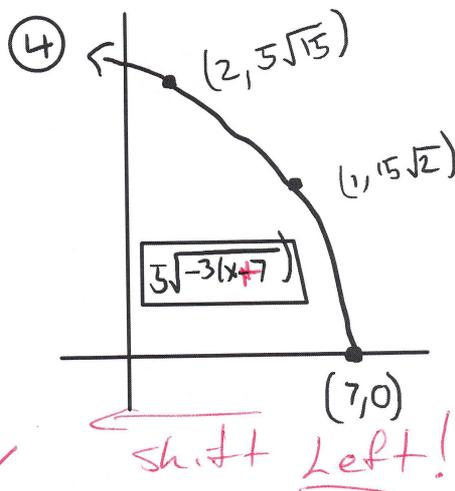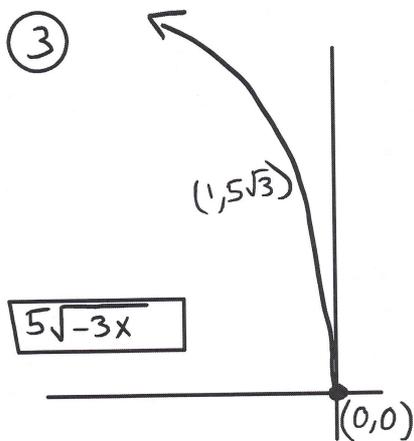
ie: start w x = 0, 1, 4
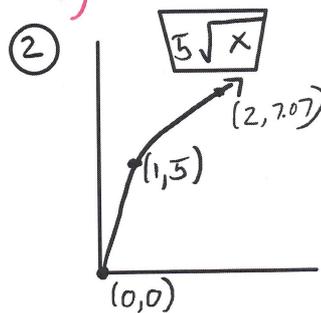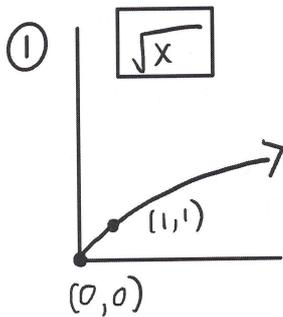
End soln:

(7,2)
$(\frac{22}{3}, -3)$
$(\frac{25}{3}, -8)$

(7,2)
(8,-6.66)
(9,-10.25)
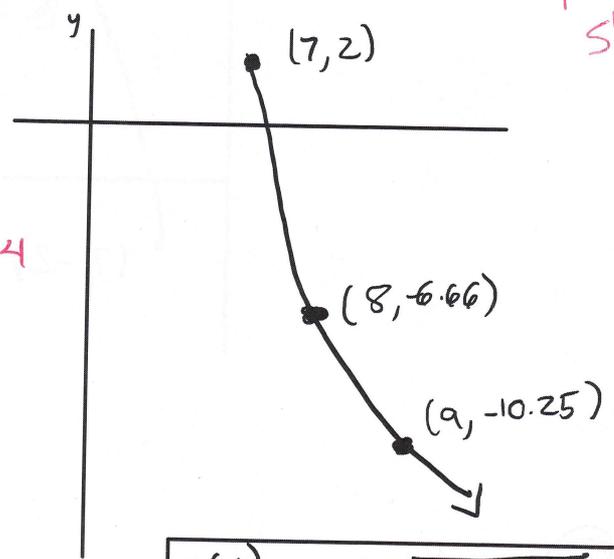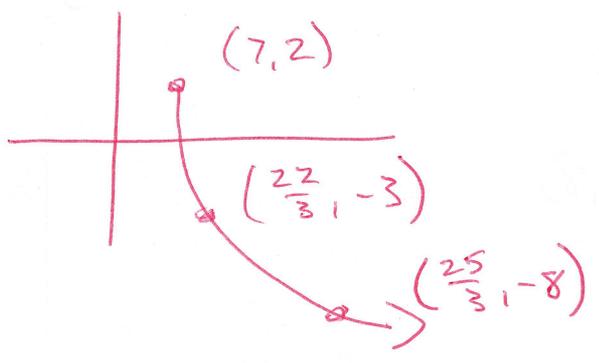
$\boxed{g(x) = -5\sqrt{3x - 21} + 2}$

shifted right **7** units
shifted up **2** units
reflected over the x axis
stretched vertically
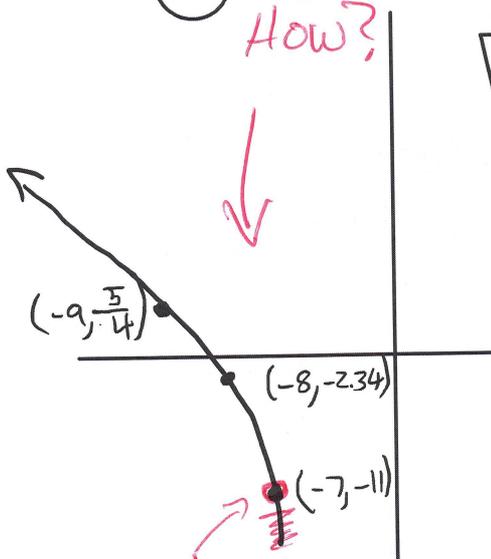
+4.5

Jade Guenigault
writing project #2
Math 1340

③ $g(x) = 5\sqrt{-3x - 21} - 11 =$
$5\sqrt{-3(x-7)} - 11$
$-3(x+7)$

① $\boxed{\sqrt{x}}$

$(1,1)$
$(0,0)$

② $\boxed{5\sqrt{x}}$

$(2, 7.07)$
$(1, 5)$
$(0,0)$

③ $\boxed{5\sqrt{-3x}}$

$(1, 5\sqrt{3})$
$(0,0)$

④ $\boxed{5\sqrt{-3(x+7)}}$

$(2, 5\sqrt{15})$
$(1, 15\sqrt{2})$
$(7, 0)$

shift Left!

⑤ How?

$(-9, \frac{5}{4})$
$(-8, -2.34)$
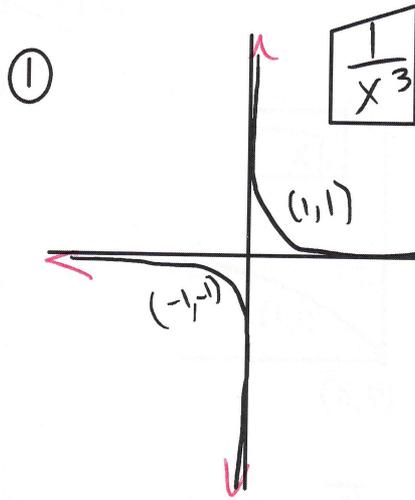$(-7, -11)$

It ends here

$\boxed{g(x) = 5\sqrt{-3x - 21} - 11}$

left 7 units
down 11 units
vertically stretched

+3.5

Jade Guenigault
Writing Project #2
Math 1340

④ $g(x) = \frac{3}{(-2x+8)^3} + 5$

① $\boxed{\frac{1}{x^3}}$

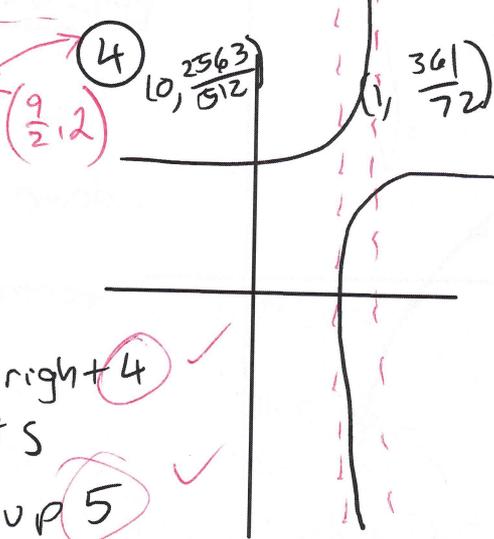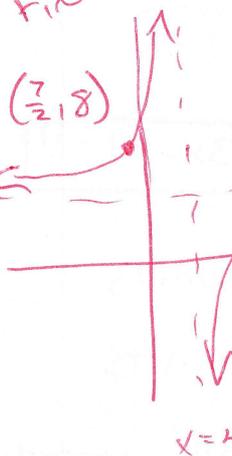(1,1)

(-1,-1)

Arrows show that it keeps going.

② $\boxed{\frac{3}{x^3}}$

(1,3)

(-1,-3)

③ Flip ok   shift unclear

$\frac{3}{(-2x+8)^3}$

$(0, \frac{3}{512})$

$(5,0)$
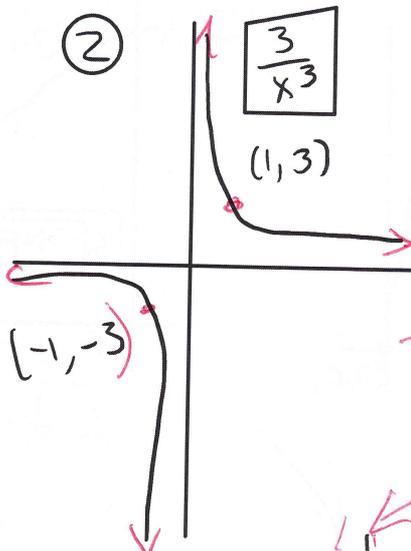
Approaches but does not cross!

$y = 0$ when $x = 5$? Nope.

Final Soln

$(\frac{7}{2}, 8)$

$y = 5$

$(\frac{9}{2}, 2)$

④ $(0, \frac{2563}{512})$

$(1, \frac{361}{72})$

overlap

$x = 4$

$g(x) = \frac{3}{(-2x+8)^3} + 5$
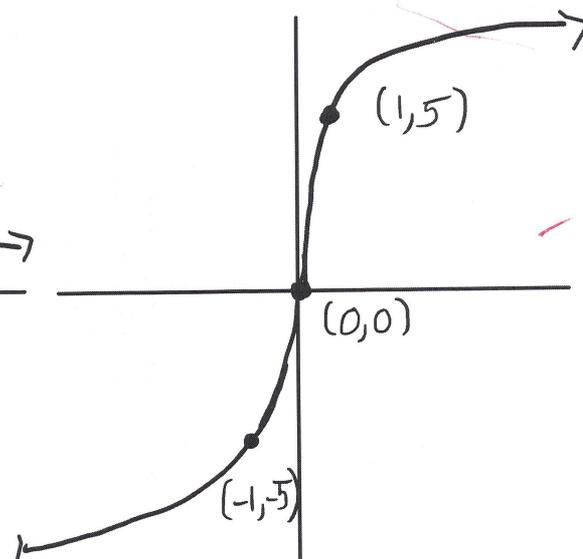
Shifted right 4 units

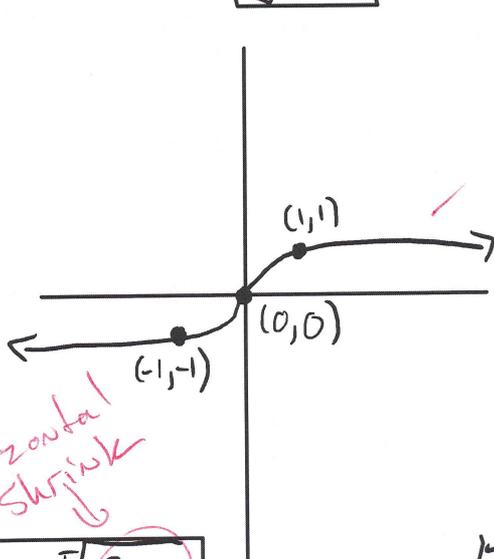Shifted up 5

vertical stretch

+3

Jade Guenigault
writing Project #2
Math 1340

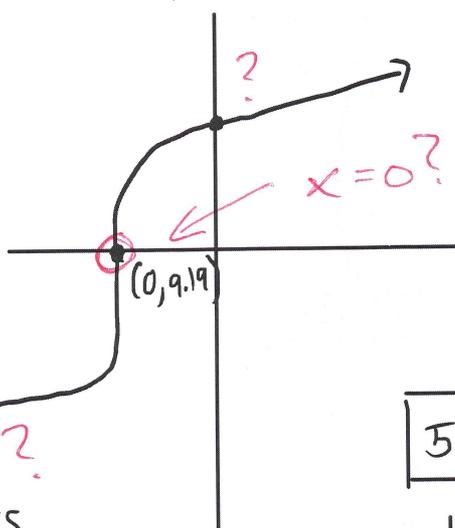⑤ $g(x) = 5\sqrt[3]{3x+21} - 6 = 5\sqrt[3]{3(x+7)} - 6$

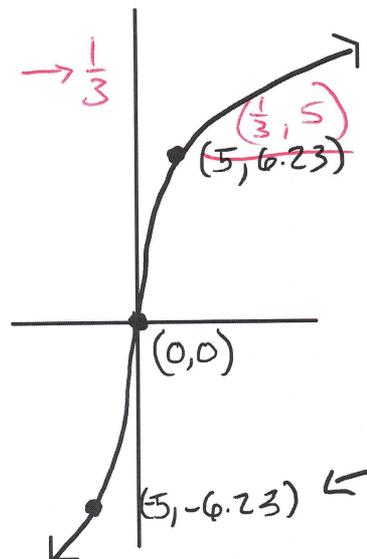① $\boxed{\sqrt[5]{x}}$

② $\boxed{5\sqrt[3]{x}}$

(1,5)

(0,0)

(-1,-5)

(1,1)

(0,0)

(-1,-1)

horizontal shrink

③ $\boxed{5\sqrt[5]{3x}}$

$3x \Rightarrow 1 \to \frac{1}{3}$

$(\frac{1}{3}, 5)$

(5, 6.23)

(0,0)

(-5, -6.23)

④ $\boxed{5\sqrt[5]{3(x+7)}}$

?

$x = 0?!$ no, $x < 0$ here!

(0, 9.19)

?

left 7 units
down 6 units
stretched
vertically

$\boxed{5\sqrt[3]{3x+21} - 6}$

⑤

$x \neq 0$ here

?

(0, -2.59)

(-1, 8.59)
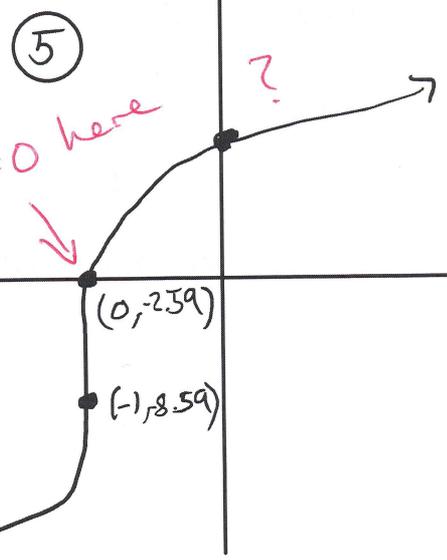
$5\sqrt[5]{18} - 6$

$5\sqrt[5]{15} - 6$

$5\sqrt[5]{12} - 6$

+2.5

Jade Guenigault
-writing project #2
Math 1340

6 $5(3x+21)^5-6$

Horiz. Shrink
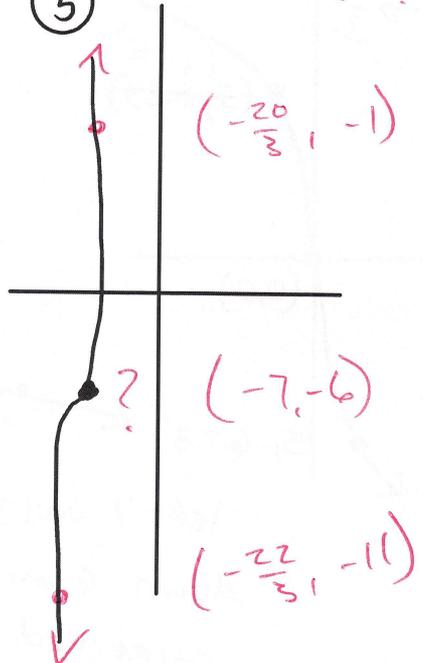
① x^5

(1,1)
(0,0)
(-1,-1)

② $5x^5$

(1,5)
(0,0)
(-1,-5)

③ $5(3x)^5$

(1,1215)
($\frac{1}{3}$, 5)
(0,0)
$(-\frac{1}{3}, -5)$
(-1,-1215)

Formula?

④ $5(3(x+7))^5$

(1, ?)
Shift Left
(0,0)
(-1, ?)
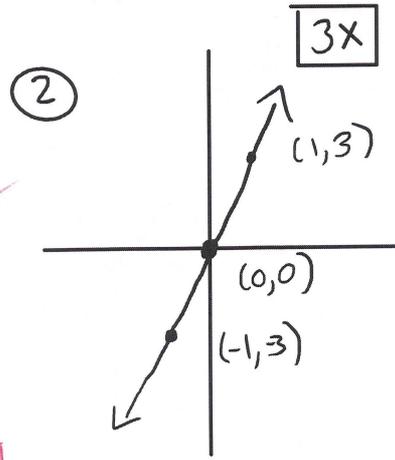How?→

⑤

$(-\frac{20}{3}, -1)$
$(-7, -6)$
$(-\frac{22}{3}, -11)$
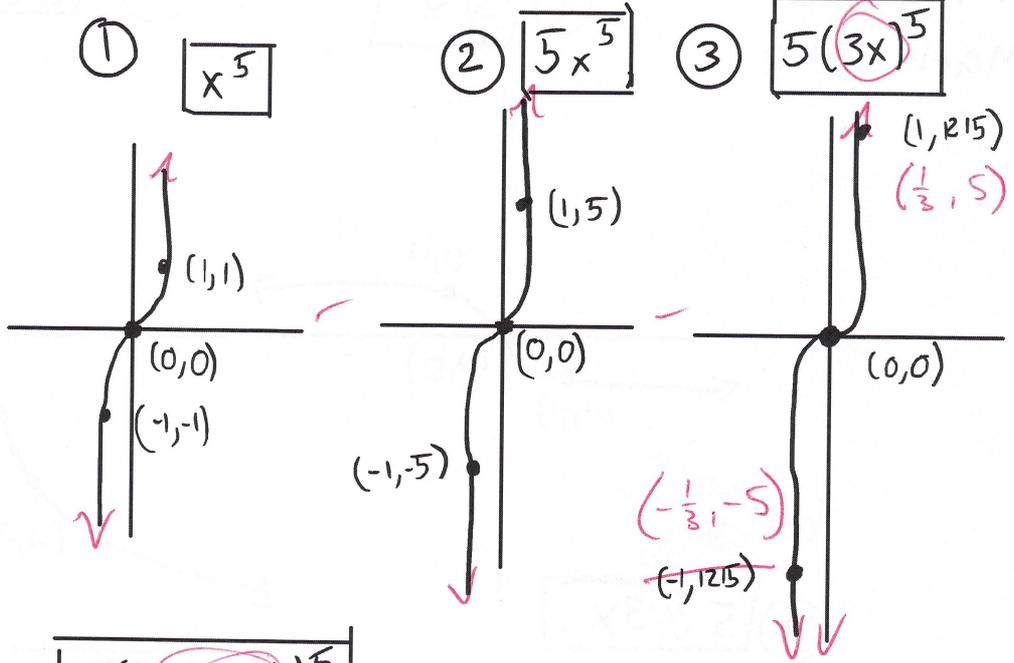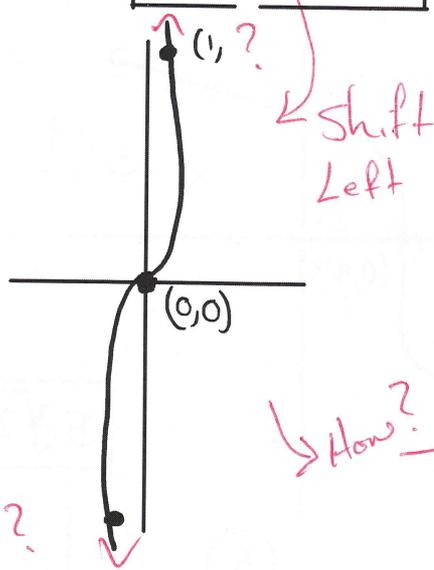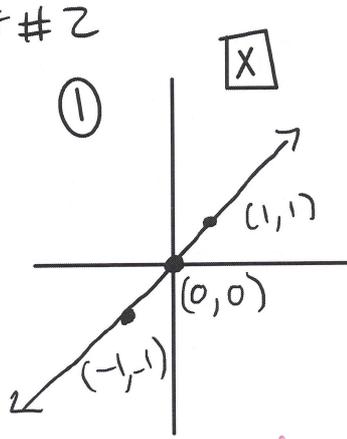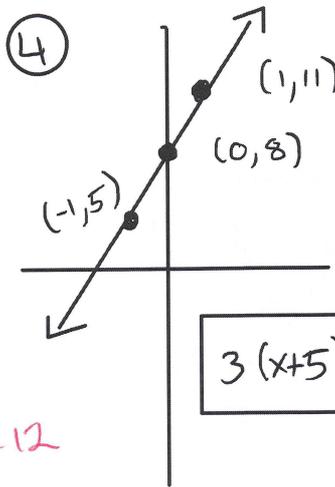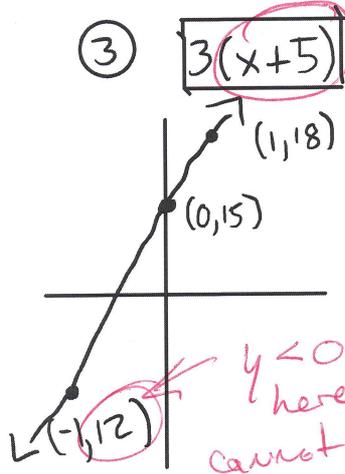
shifted left 7.023 units
shifted down 6 units
stretched vertically

+2.5

Jade Guenigault
writing project #2
Math 1340

⑦ $g(x) = 3(x+5) - 7$

① $\boxed{X}$

(1,1)
(0,0)
(-1,-1)
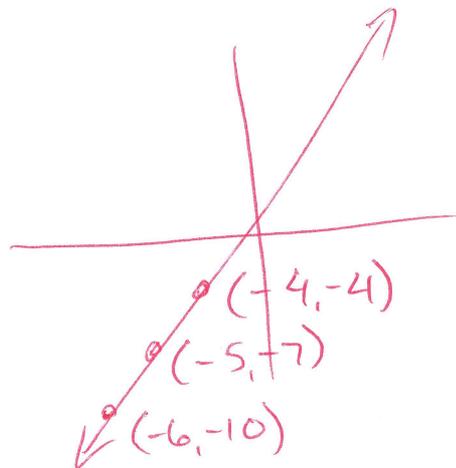
② $\boxed{3X}$

(1,3)
(0,0)
(-1,3)

shift left

③ $\boxed{3(x+5)}$

(1,18)
(0,15)
(-1,12)

$y < 0$ here, cannot $= 12$

④

(1,11)
(0,8)
(-1,5)

$\boxed{3(x+5) - 7}$

shift down

vertical stretch

(-4,-4)
(-5,-7)
(-6,-10)

+2.5

Jade Guenigault
writing project #2
Math 1340

(8) $g(x) = 3(x+5)^2 - 7$

① x^2

$(-1,1)$ $(1,1)$
$(0,0)$

② $3x^2$

$(-1,3)$ $(1,3)$
$(0,0)$

③ $3(x+5)^2$

$(-6,3)$ $(-4,3)$
$(-5,0)$
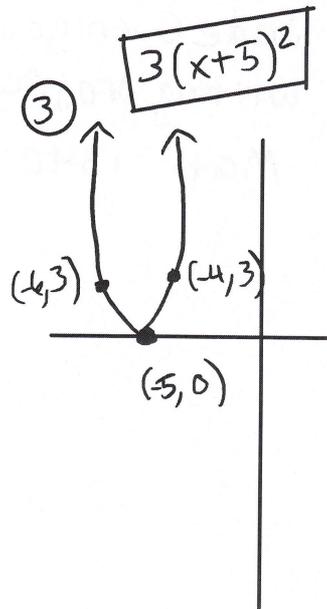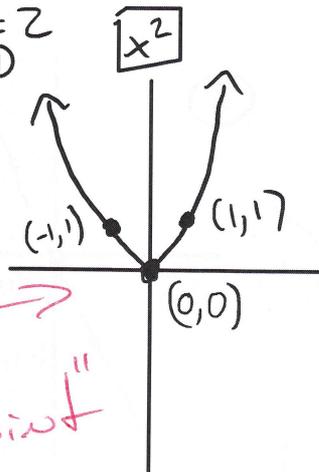
There is no "point" on this curve.

④ $3(x+5)^2 - 7$

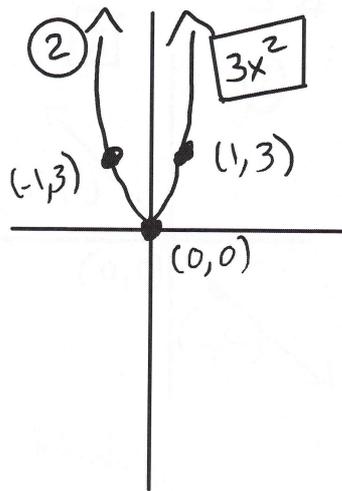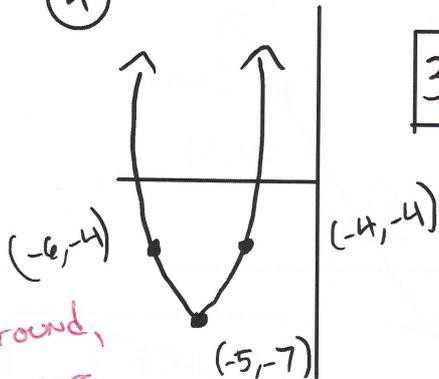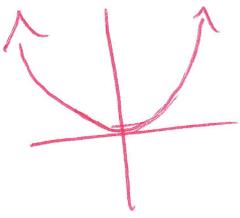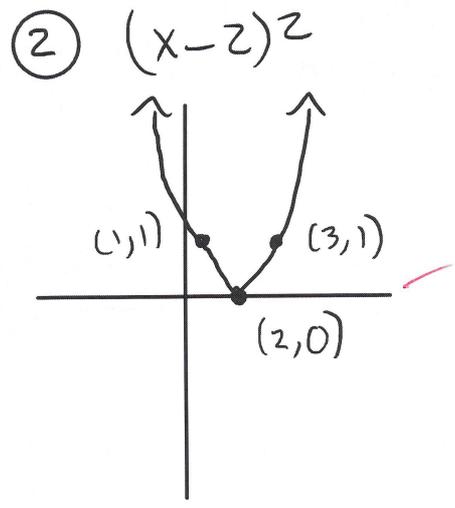$(-6,-4)$ $(-4,-4)$
$(-5,-7)$

like this...
x^2
always round, never corners.
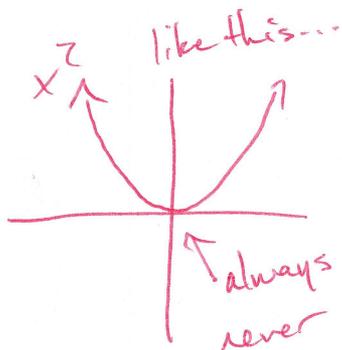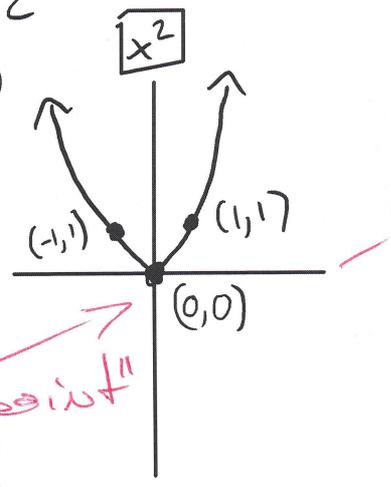
left 5
down 7
vertical stretch

+4.5

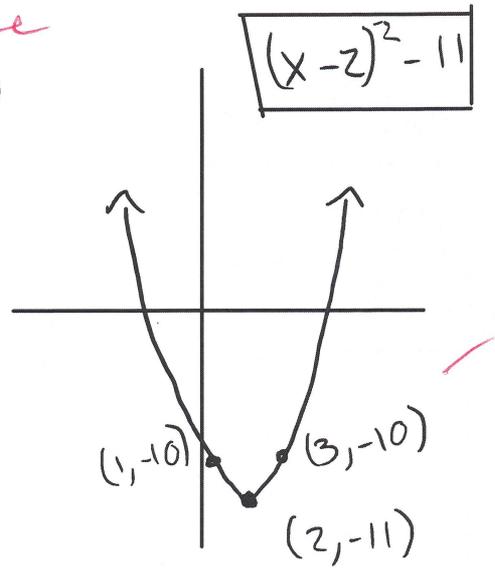Jade Guenigault
writing project #2
Math 1340 ①

⑨ $g(x) = x^2 - 4x - 7 = (x-2)^2 - 11$

$\boxed{x^2}$

(-1,1) ● ● (1,1)
(0,0)

② $(x-2)^2$

(1,1) ● ● (3,1)
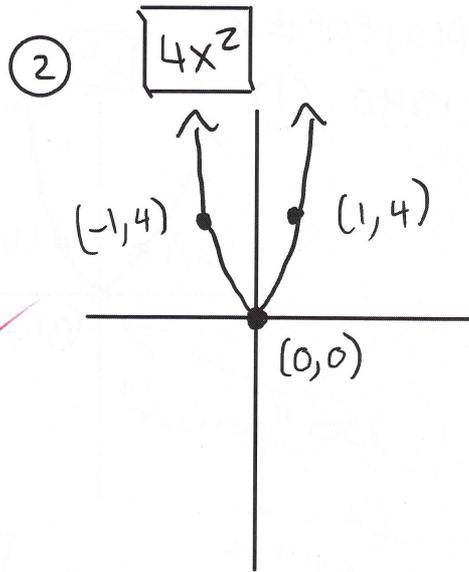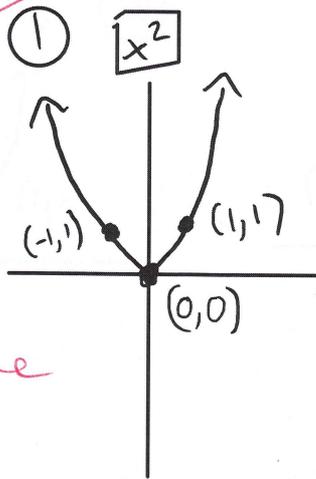(2,0)

No "point"
It's a
curve
③

$\boxed{(x-2)^2 - 11}$

(1,-10) ● ● (3,-10)
(2,-11)

+4.5

Jade Guenigault
writing project #2
Math 1340

(10) $g(x) = 4x^2 + 5x + 17$

① $\boxed{x^2}$

$(-1,1)$ $(1,17)$
$(0,0)$

② $\boxed{4x^2}$

$(-1,4)$ $(1,4)$
$(0,0)$

Need to
Complete the square

$\boxed{4x^2 + 5x}$

$(-2,6)$ $(1,9)$
$\left(-\frac{5}{8}, -\frac{25}{16}\right)$
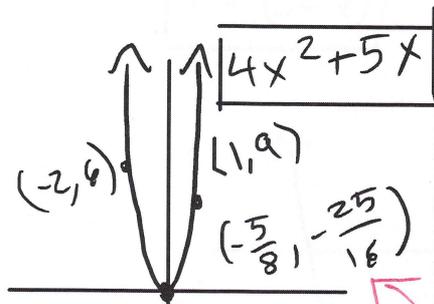
This is where
things went
wrong.
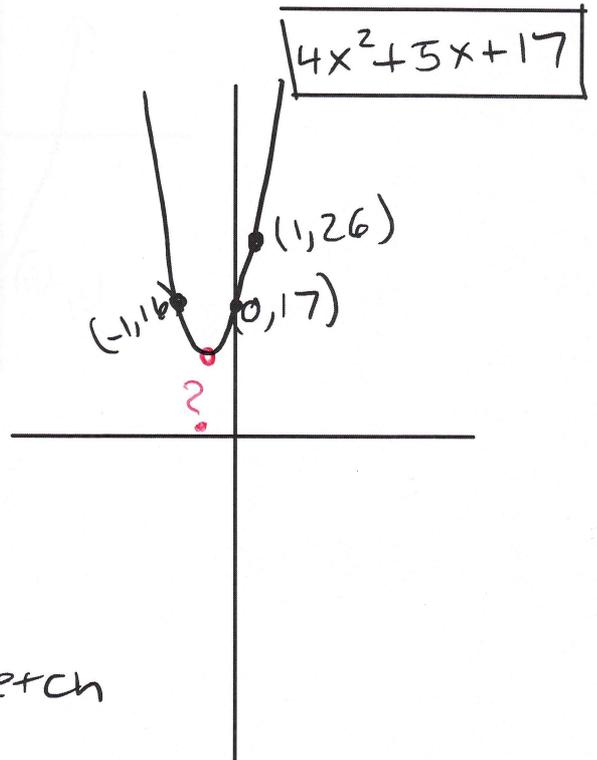
left .625
up 15.438

vertical stretch

$\boxed{4x^2 + 5x + 17}$

$(1,26)$
$(-1,16)$ $(0,17)$
?

$+2.5$