MATH 1340   Isabella Ortiz
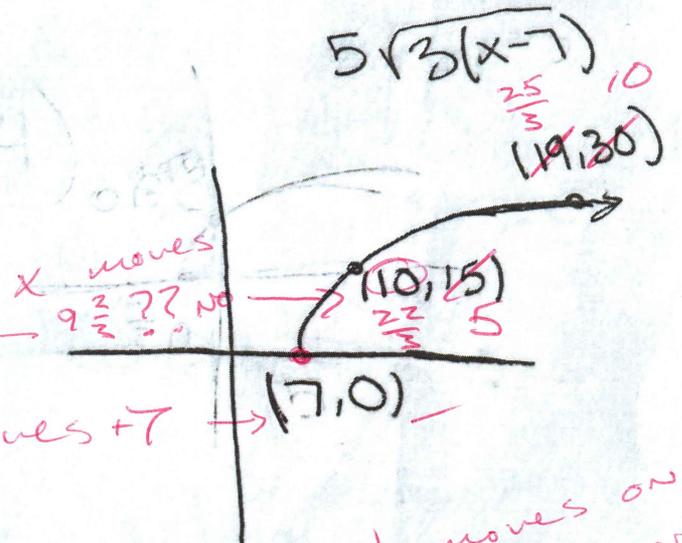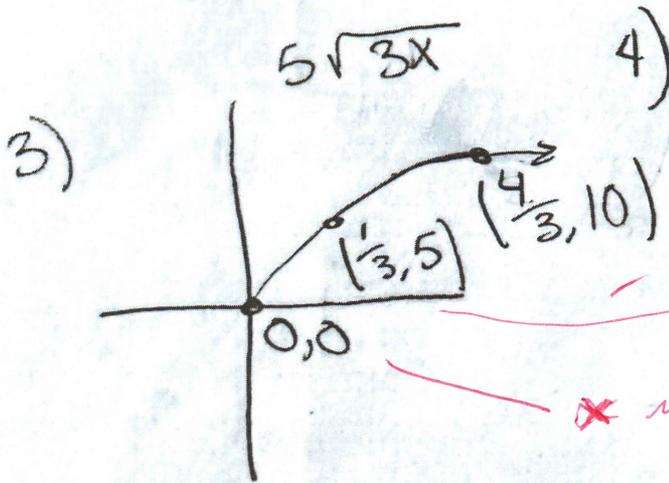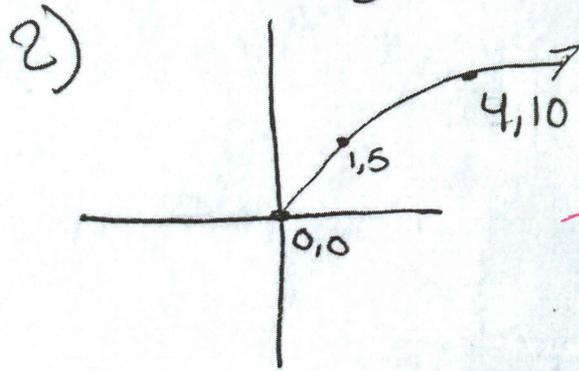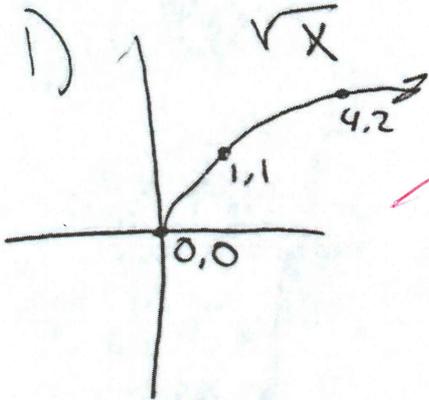
1) $g(x) = 5\sqrt{3x - 21} - 2$

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

1) $\sqrt{x}$

(0,0) (1,1) (4,2)

2) $5\sqrt{x}$

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

3) $5\sqrt{3x}$

(0,0) $\left(\frac{1}{3}, 5\right)$ $\left(\frac{4}{3}, 10\right)$

4) $5\sqrt{3(x-7)}$

$\frac{25}{3}$ 10 (19, 30)

(10, 15) $\frac{22}{3}$ 5

x moves $9\frac{2}{3}$?? NO

(7, 0)
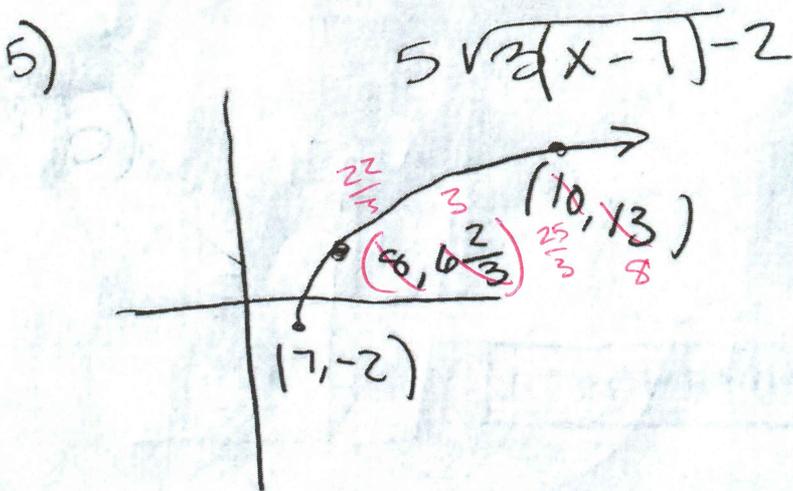
✗ moves +7 →

good moves on picture, #'s were just off a bit.

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

$\frac{22}{3}$ 3 (10, 13)

$\left(8, 6\frac{2}{3}\right)$ $\frac{25}{3}$ 8

(7, -2)

x	y
7	-2
8	$6\frac{2}{3}$
10	13

+4

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

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

1) $\sqrt{x}$

0,0   1,1   4,2

2) $-5\sqrt{x}$

0,0   1,-5   4,-10

3) $-5\sqrt{3x}$

0,0 $\frac{1}{3},-5$ $\frac{4}{3},-10$

4) $-5\sqrt{3x-7}$

"x-7" $\Rightarrow$ x=7

$\frac{1}{3} + 7 = \frac{1}{3} + \frac{21}{3}$

$= \frac{22}{3}$

7,0 $\frac{22}{3},-15 \; -5$ $19,-30 \; -10$

This step "y" doesn't change
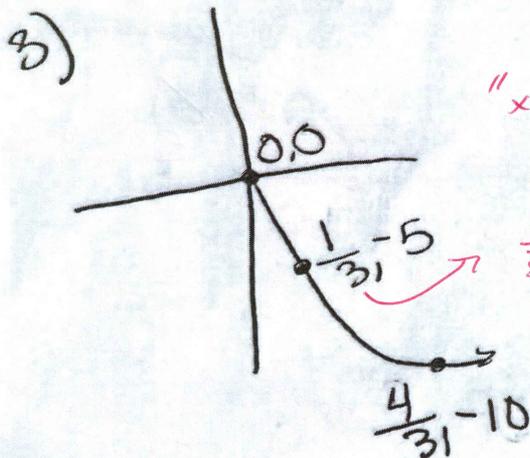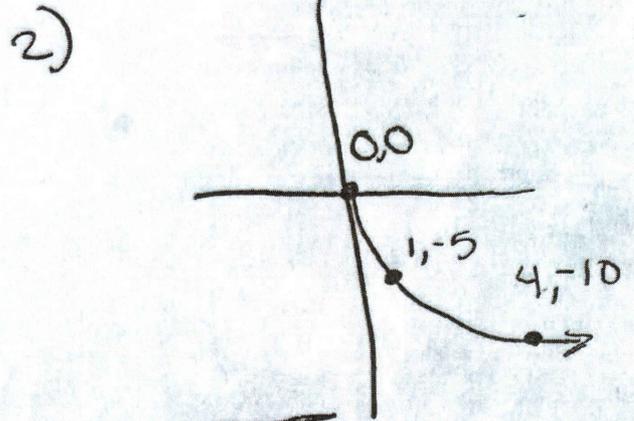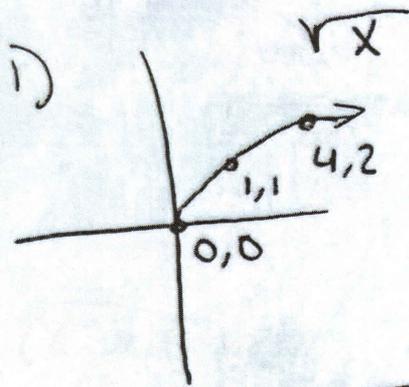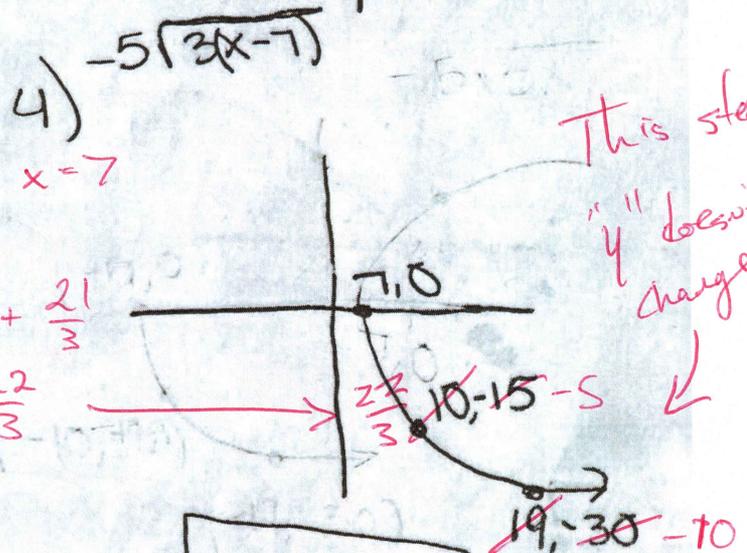
x	y
7	2
8	$-6\frac{2}{3}$
10	-13

5)

If you followed the #s you start with...
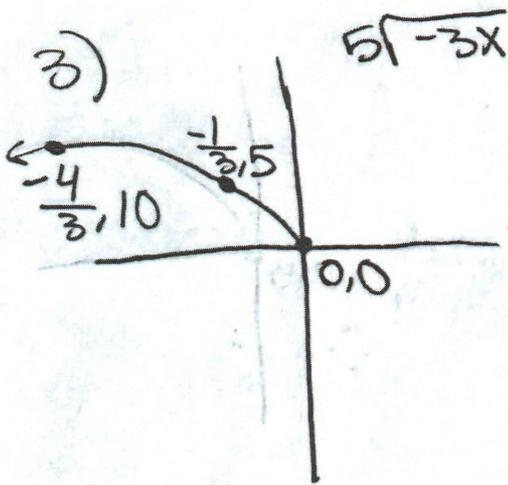

(-7,2) $(8, -6\frac{2}{3})$ $(\frac{22}{3}, -3)$ (10,-13)
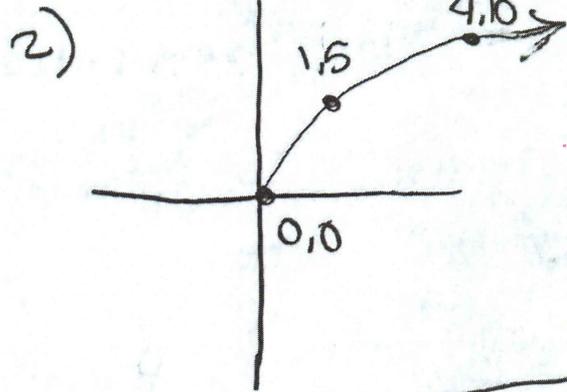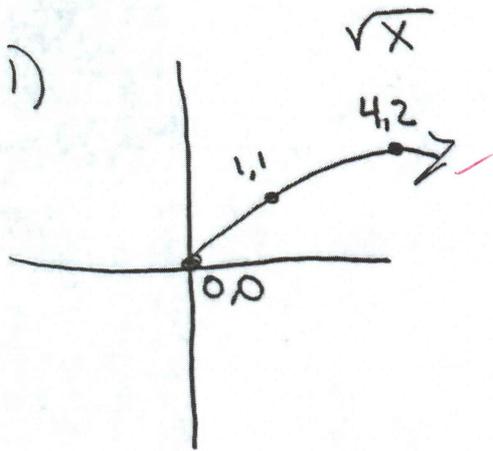
$(\frac{25}{3}, -8)$

+4
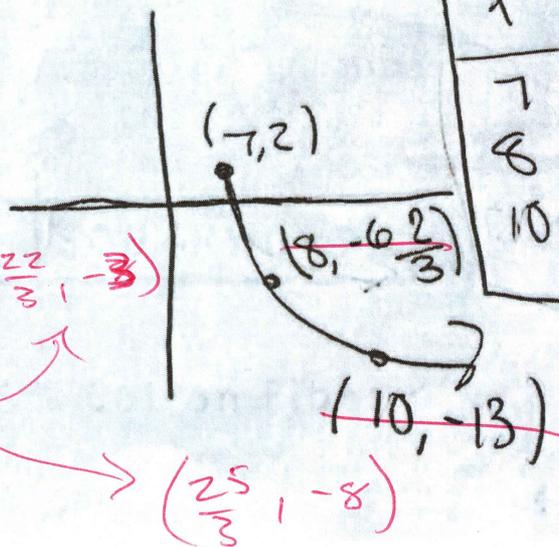
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3) $g(x) = 5\sqrt{-3x-21} - 11$

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

$\sqrt{x}$

1)

(0,0) (1,1) (4,2)

2)

$5\sqrt{x}$

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

3)

$5\sqrt{-3x}$

$\left(\frac{-4}{3}, 10\right)$ $\left(\frac{-1}{3}, 5\right)$ (0,0)

4)

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

(-19,30) (-10,15) (-7,0)
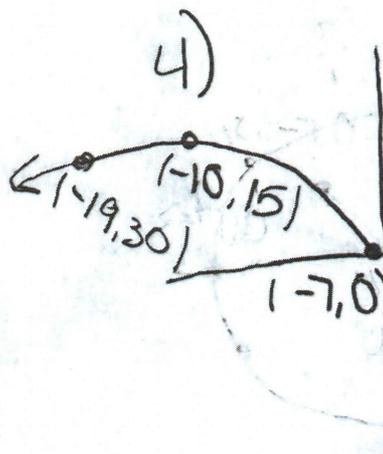
Just so it's a little clearer, leave a bit more gap between x=-7 and x=0 ☺

5   5 No flip - shift down

(-7,-11) (-10,-26) (-19,-41)

x	y
-7	-11
-10	-26
-19	-41

(-7,-11)

#4
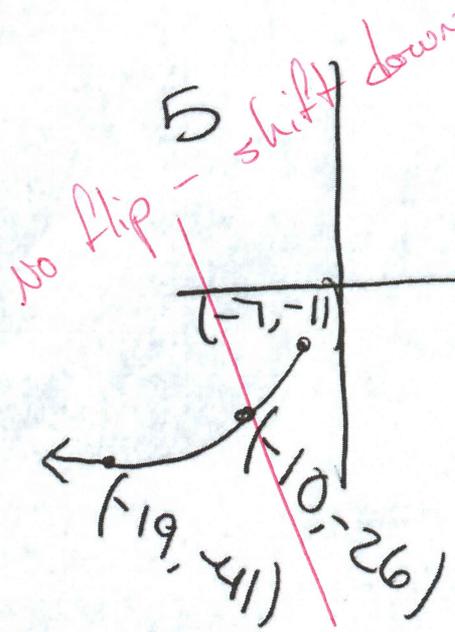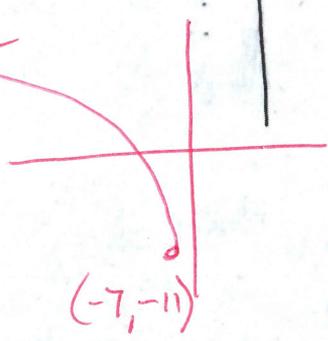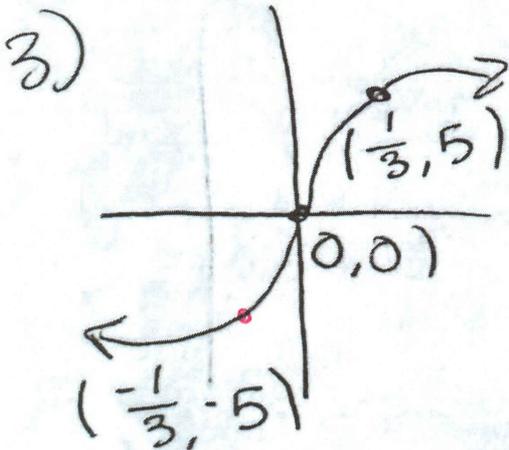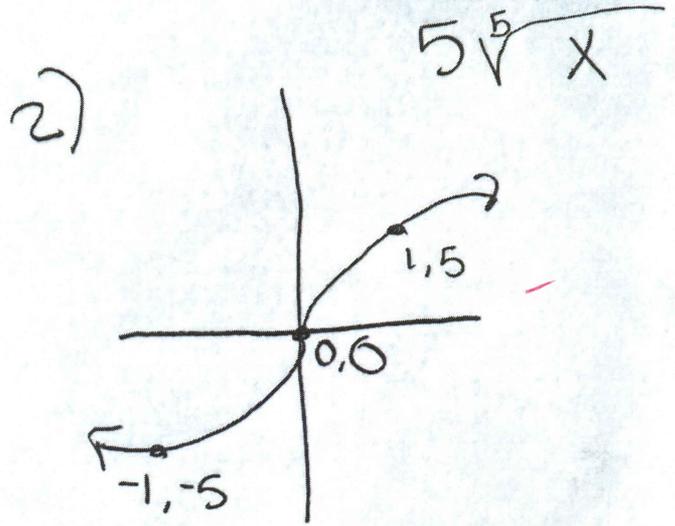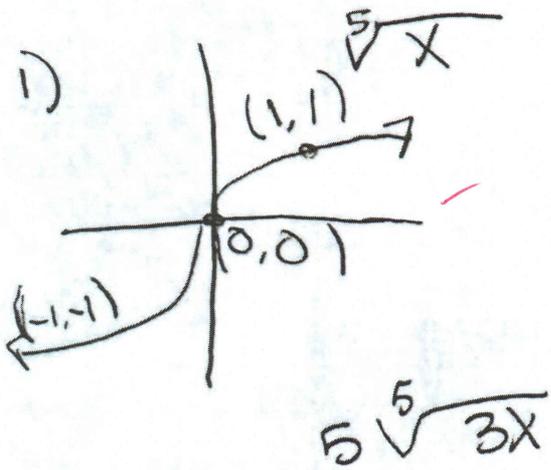
4) $g(x) = \dfrac{3}{(-2x+8)^3} + 5$

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

1) $\sqrt[5]{x}$

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

2) $5\sqrt[5]{x}$

$1,5$
$0,0$
$-1,-5$

$5\sqrt[5]{3x}$

3)

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

4) $5\sqrt[5]{3(x+7)}$

$\frac{-20}{3}, 5$
$-7, 0$
$\left(\frac{-22}{3}, -5\right)$

"−6"
$\left(\frac{-20}{3}, -1\right)$
$(-7, -6)$
$\left(\frac{-22}{3}, -11\right)$

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

$(74, 9)$
$(-7, -6)$
$(-88, -21)$

X	Y	
74	9	
-7	-6	
-27	5	17/60
-88	-21	

+4

MATH 1340

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

1) x^5

$(1,1)$

$(0,0)$

$(-1,-1)$

2) $5x^5$

$(1,5)$

$(0,0)$

$(-1,-5)$
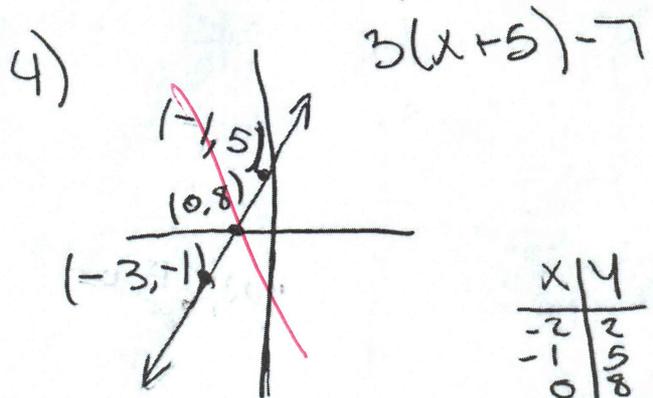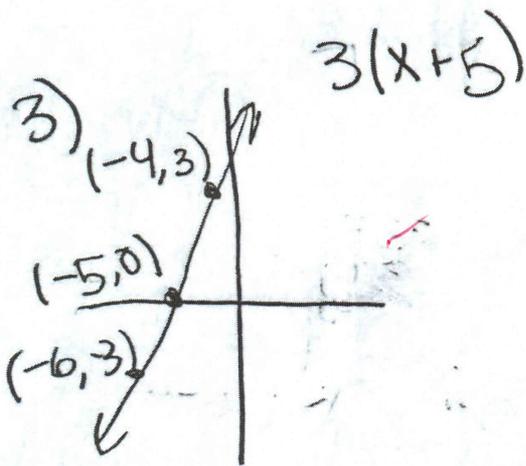
3) $5(3x)^5$

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

$(0,0)$

$\left(\frac{-1}{3}, -5\right)$

4) $5(3(x+7))^5$

$?$

$(-7,0)$

$?$

5)

$\left(\frac{-20}{3}, -1\right)$

$(-7, -6)$

$\left(\frac{-22}{3}, -11\right)$

+3.5

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7) $g(x) = 3(x+5) - 7$

1) x

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

2) $3x$

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

3) $3(x+5)$

$(-4,3)$
$(-5,0)$
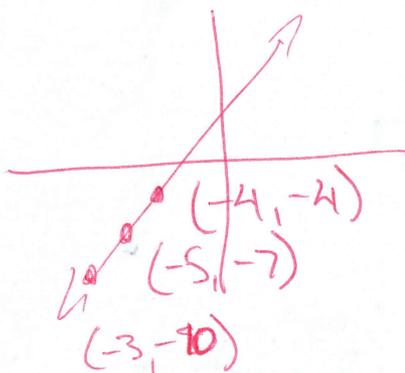$(-6,3)$

4) $3(x+5) - 7$

$(-1,5)$
$(0,8)$
$(-3,-1)$
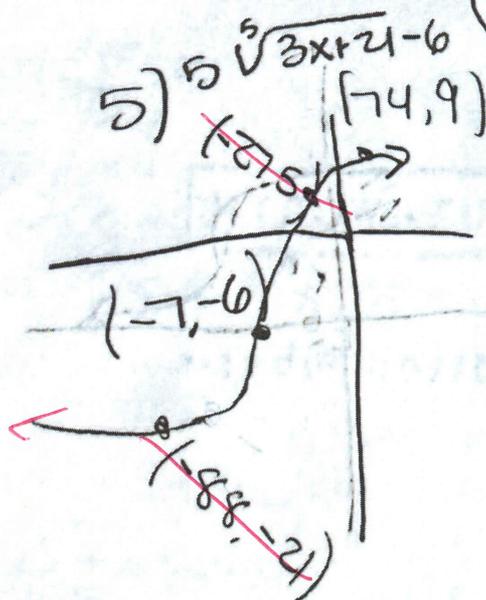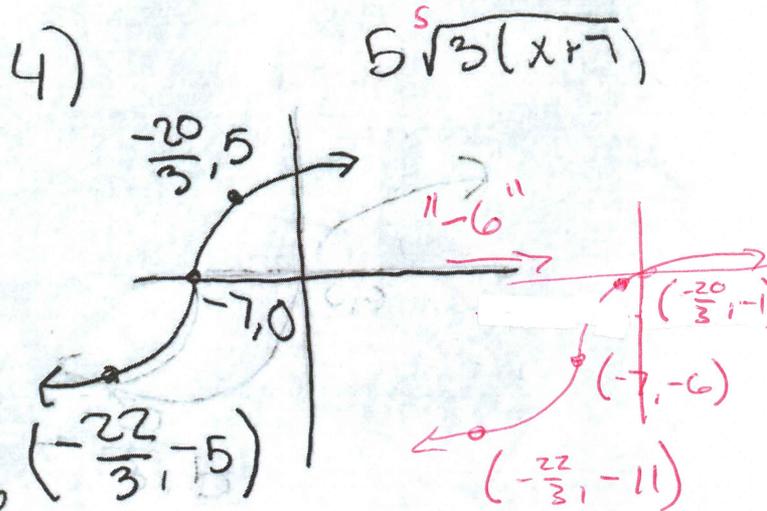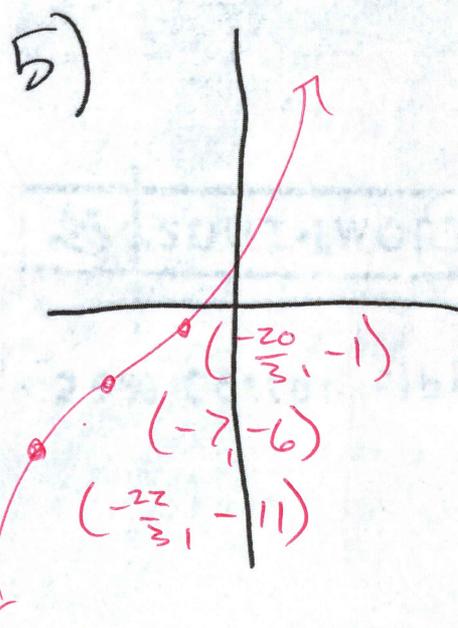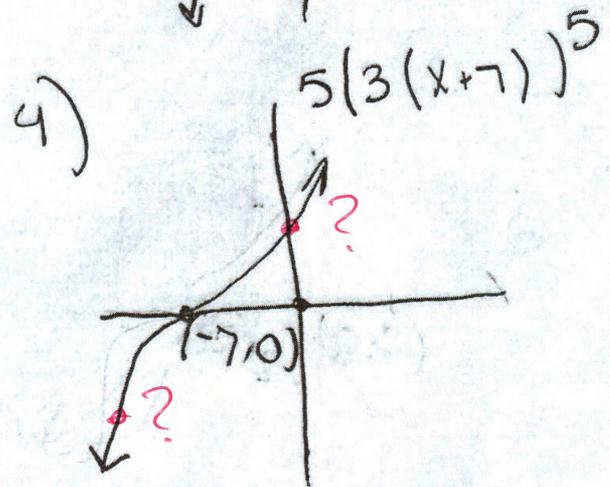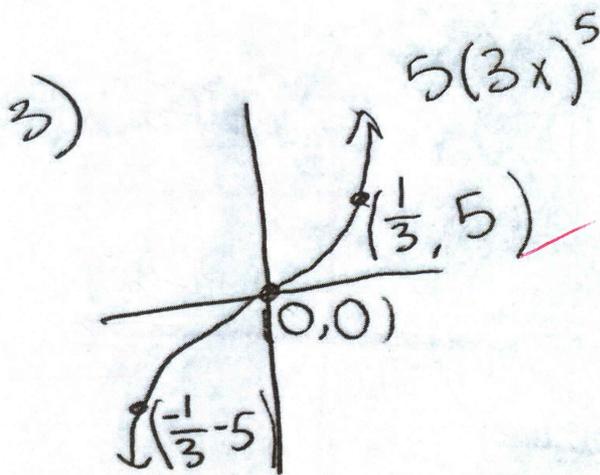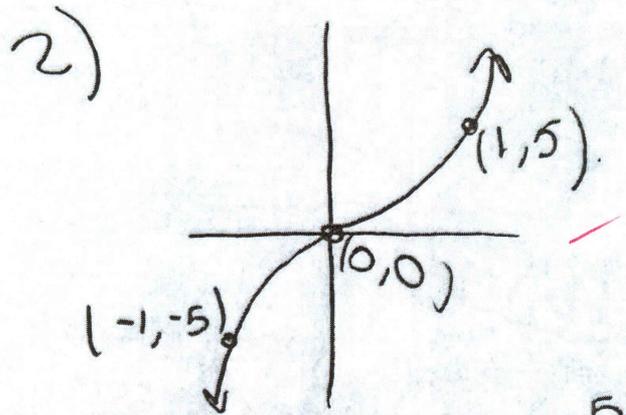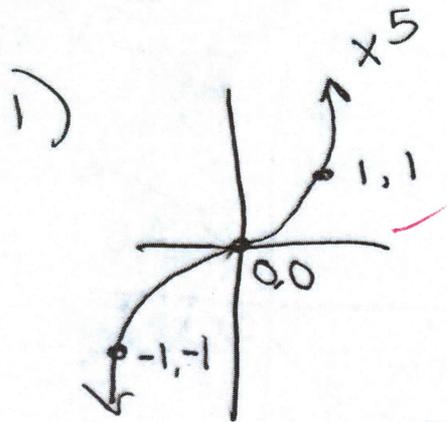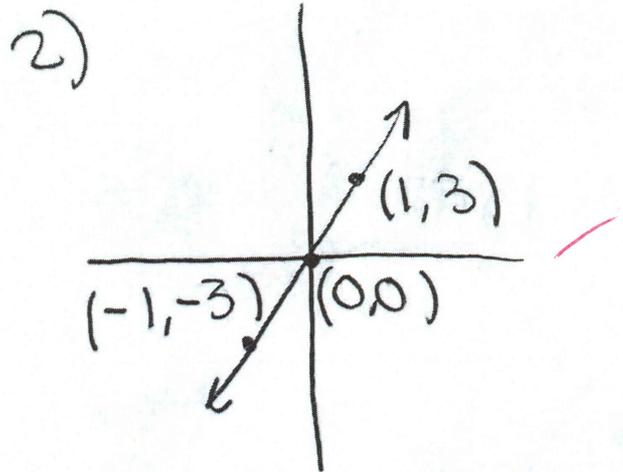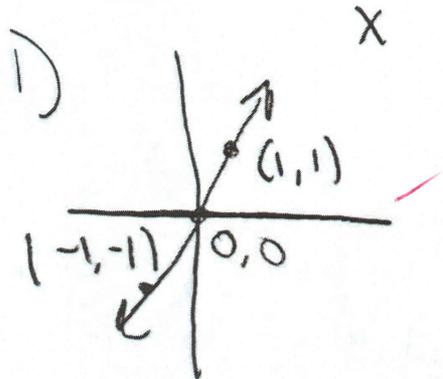
x	y
-2	2
-1	5
0	8
1	11
2	14

$3(x+5) \boxed{-7}$ ← shift down 7.

$(-4,-4)$
$(-5,-7)$
$(-3,-10)$

+4

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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)

$3(x+5)^2$

$(-6,3)$ $(-4,3)$
$-5,0$

4)

$3(x+5)^2 - 7$

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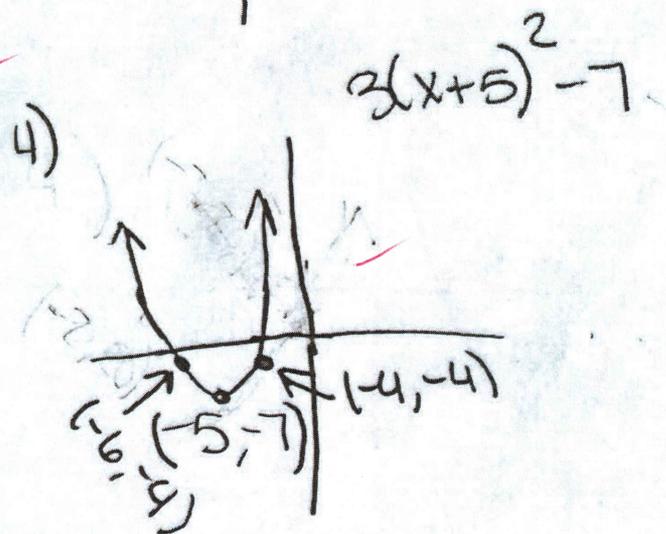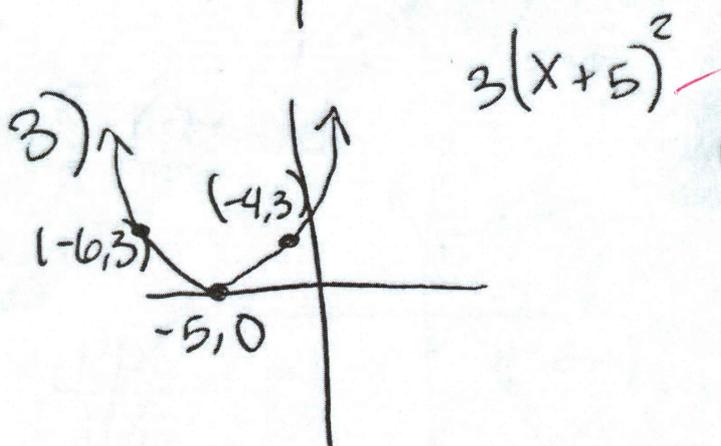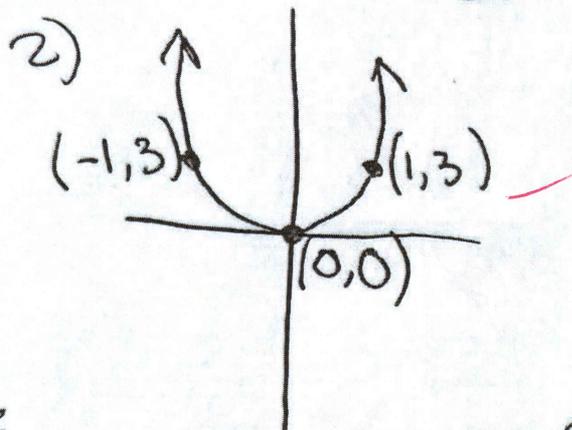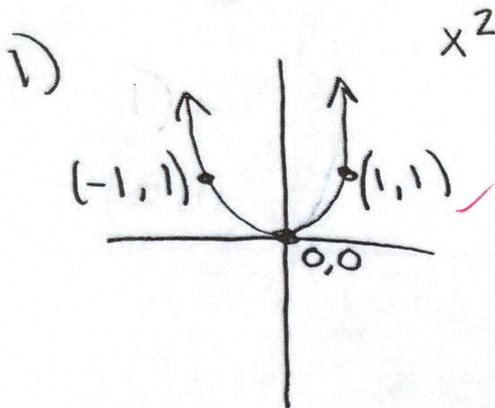
Nice!

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9) $x^2 - 4x - 7$ →Show how

$$= (x-2)^2 - 11$$

1)

x^2

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

$0,0$

2)

$(x-2)^2$

$(1,1)$ $(3,1)$

$(2,0)$

3)

$(x-2)^2 - 11$

$(-4,25)$? $(8,25)$?

$(1,-10)$ $(3,-10)$

$(2,-11)$

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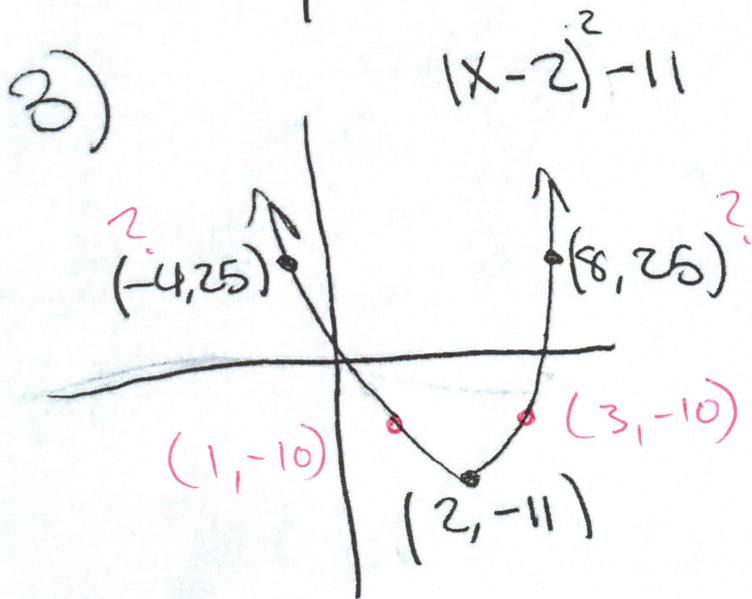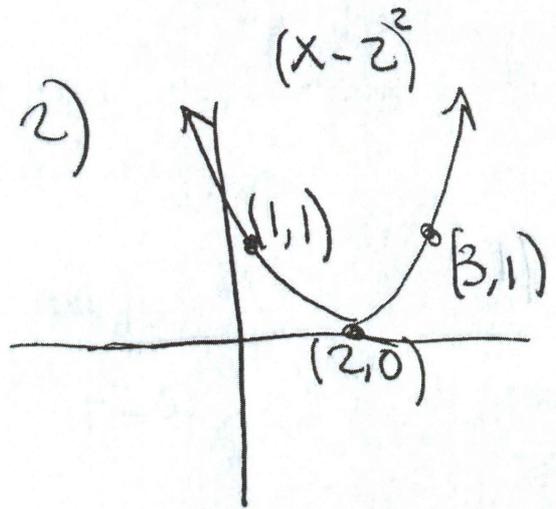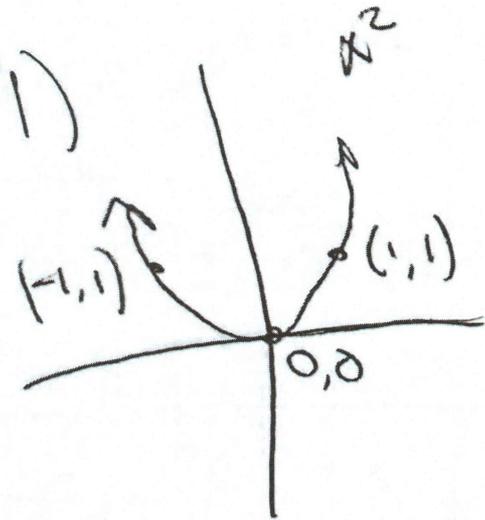
10) $g(x) = 4x^2 + 5x + 17$

$$gx = 4\left(x^2 + \frac{5}{4}x\right) + 17$$

$$\cdot\left(4 \cdot \frac{25}{64}\right) \qquad +\frac{25}{64}$$
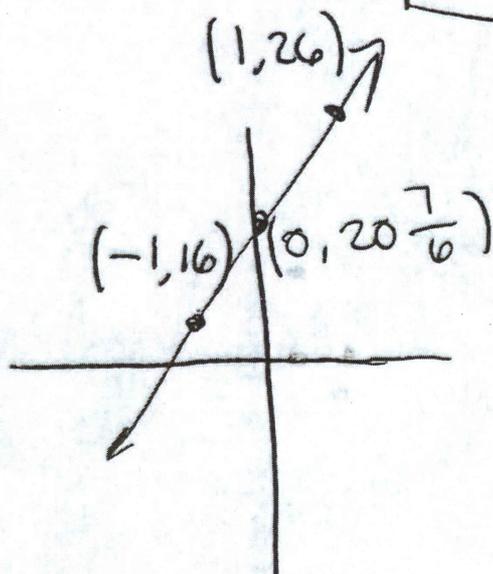
$$g(x) + \frac{4}{1} \times \frac{25}{64} = 4\left(x^2 + \frac{5}{4}x + \frac{25}{64}\right) + 17$$

$$g(x) + \frac{25}{16} = 4\left(x + \frac{5}{8}\right)^2 + 17$$

$$-\frac{25}{16} \qquad\qquad -\frac{26}{16}$$

$$\boxed{g(x) = 4\left(x + \frac{5}{8}\right)^2 + \frac{247}{16}}$$ Nice!

$$\begin{array}{c|c} -1 & 16 \\ 0 & 20\frac{7}{16} \\ 1 & 26 \end{array}$$

$(1,26)$

$(-1,16)$ $(0, 20\frac{7}{6})$

Start @ x^2

$+2$