TURN-IN
"Yellow" HW Packet
- include your total
- most recent goes last

9 assignments
36

HW Help Hotline

Then...
Pick Up the Warm Up

Try not to use a Calculator (except for to check your answers)

Shifts to the right 2 units and down 5 units. $y = (x-2)^2 - 5$

Shifts to the left 3 units and up 1 unit. $y = (x+3)^2 + 1$

Shifts down 4 units. $y = x^2 - 4$

Shifts right 10.9 units. $y = (x-10.9)^2$

Stretched vertically by a factor of 2.5 and shifted 9.8 units left and 8 units down.

$y = 2.5(x+9.8)^2 - 8$

Compressed vertically by a factor of 0.4 and shifted 7.3 units to the right.

$y = 0.4(x-7.3)^2$

$\sqrt{3}\cdot\sqrt{3} = 3$ $\sqrt{3\cdot3} = \sqrt{9}$

$\sqrt{3}+\sqrt{3} = 2\sqrt{3}$

$\sqrt{24} = \sqrt{4}\cdot\sqrt{6} = 2\sqrt{6}$

$\sqrt{\frac{7}{16}} = \frac{\sqrt{7}}{\sqrt{16}} = \frac{\sqrt{7}}{4}$

$\frac{\sqrt{250}}{\sqrt{10}} = \sqrt{\frac{250}{10}} = \sqrt{25} = 5$

$\sqrt{23}$ $\sqrt{10}$

1 4 9 11 25

(3) Complete square with NO box

$y + 25 = x^2 + 10x + 25 + 100$

$y + 25 = (x+5)^2 + 100$

$y = (x+5)^2 + 75$

(4) $y = x^2 + bx + 20$

Questions on homework

2-50 (b)

$y = x^2 - 4x + 9$

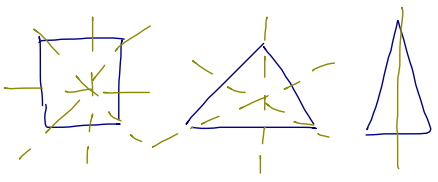
$y = \begin{array}{|c|c|}\hline x^2 & -2x \\ \hline -2x & \\ \hline \end{array} + 9$

(d) $y = x^2 + 7x - 2$

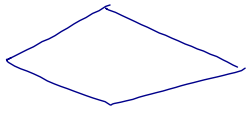
$y =$

x^2	$\frac{7}{2}x$
$\frac{7}{2}x$	

2-59 a) figures with lines of symmetry



b) with 2 lines of Sym



c) infinite ?

2-60] $y = 3x - 1$ $2y + 5x = 53$

2-61 Leadfoot Lettie 80 mph 1 mi 65 mph

a) how long for 50 miles

$d = rt$

$50 = 80 \cdot t$

$t = \frac{50}{80} = .625$ hours

37.5 min

(b) 50 miles at speed limit

$d = rt$ $50 = 65 \cdot t$

$\{$

.77 hours

$46 \cdot 14$ min

(c) Speeding ticket $200

What would be her cost per minute of the time saved by speeding?

.77 hours − .625 hours = .145 hours

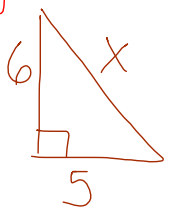
$\approx$ 8.7 min

So $\frac{\$200}{8.7}$

$\approx \$22.99$ / min

2-62

(a)

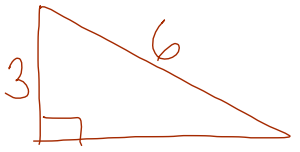


$x^2 = 5^2 + 6^2$

$x = \sqrt{25+36}$

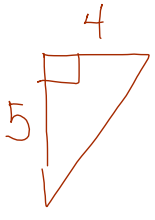
$x = \sqrt{61}$

(b) $m\angle C =$



C

(c)



(d)

Soh-Cah-Toa

2-63

(a) house purchased for $120,000 annual appreciation 6%

(b) bacteria 180 22% per hour

HW lottery

On the road to becoming.....

proficient with transformating parabolas

and

proficient at writing functions of parabolos in both standard form and graphing form

On the road to becoming.....

proficient with transformating parabolas

proficient at writing functions of parabolos in both standard form and graphing form

Standard form: $y = ax^2 + bx + c$

Graphing form: $y = a(x - h)^2 + k$ ←←←

*F*actored form: $y = a(x + b)(x + c)$.

Notes

Graphing form of a parabola:

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

Graphing form of a parabola:

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

Vertical stretch factor

$a > 1$ stretch ↑↓

$0 < a < 1$ shrink ↓↑

Graphing form of a parabola:

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

Vertical stretch factor

$a > 1$ stretch

$0 < a < 1$ shrink

if $a < 0$, reflect over x-axis

$y = x^2$

Graphing form of a parabola:

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

Vertical stretch factor

$a > 1$ stretch

$0 < a < 1$ shrink

if $a < 0$, reflect over x-axis

horiz. translation constant

$(x-5)^2$ 5 right

$(x+5)$ 5 left

Graphing form of a parabola:

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

Vertical stretch factor

$a > 1$ stretch

$0 < a < 1$ shrink

if $a < 0$, reflect over x-axis

horiz. translation constant

$(x-5)^2$ 5 right

$(x+5)$ 5 left

Vertical translation constant

$+k$ up

$-k$ down

Two objectives today

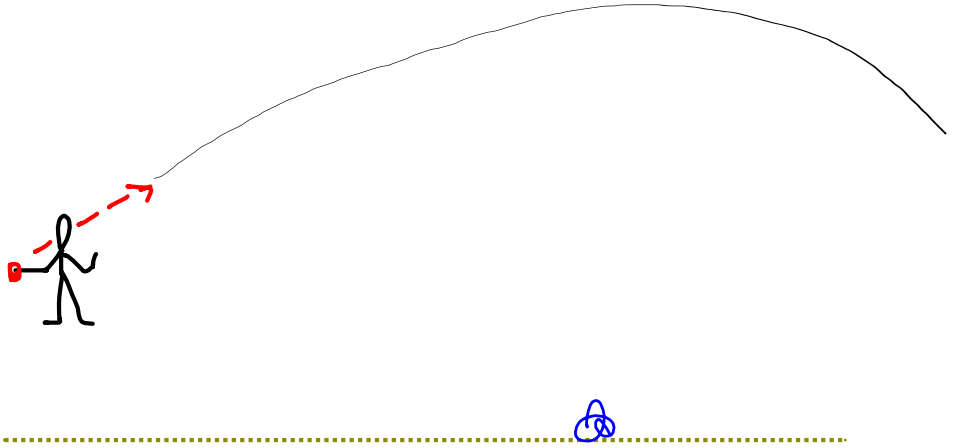
Transform a new function ($y=x^3$)

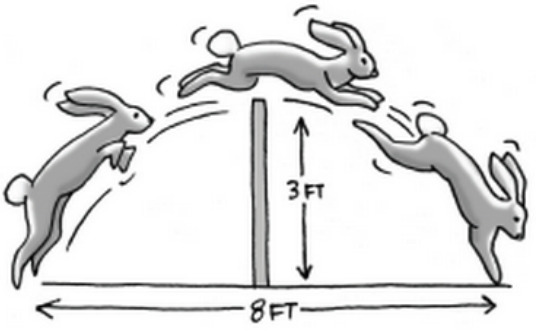
Create a mathematical model in a situation that requires a parabola.

AIM #1

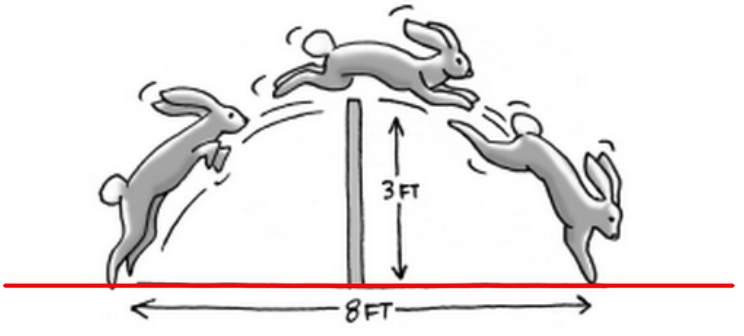
Title

Modeling with Parabolas

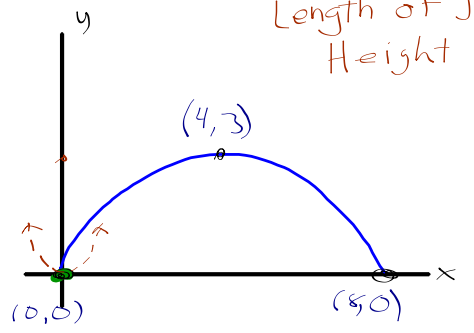




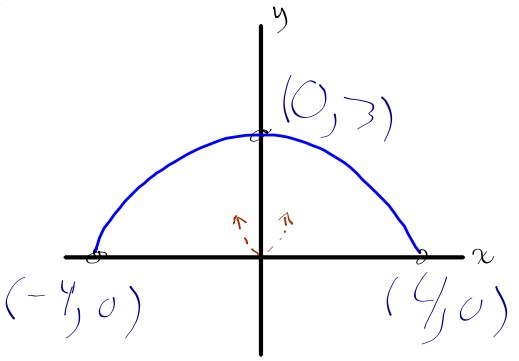
read 2-64 p.79



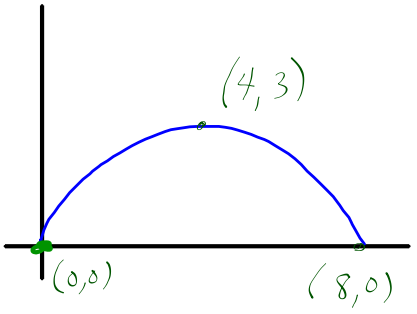
Length of jump = 8'
Height 3'

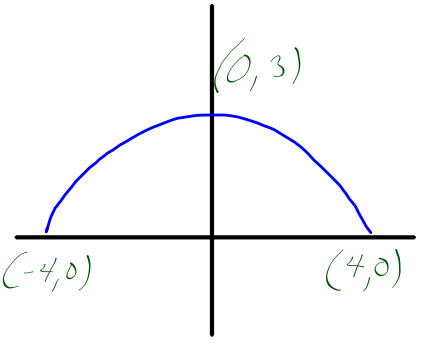


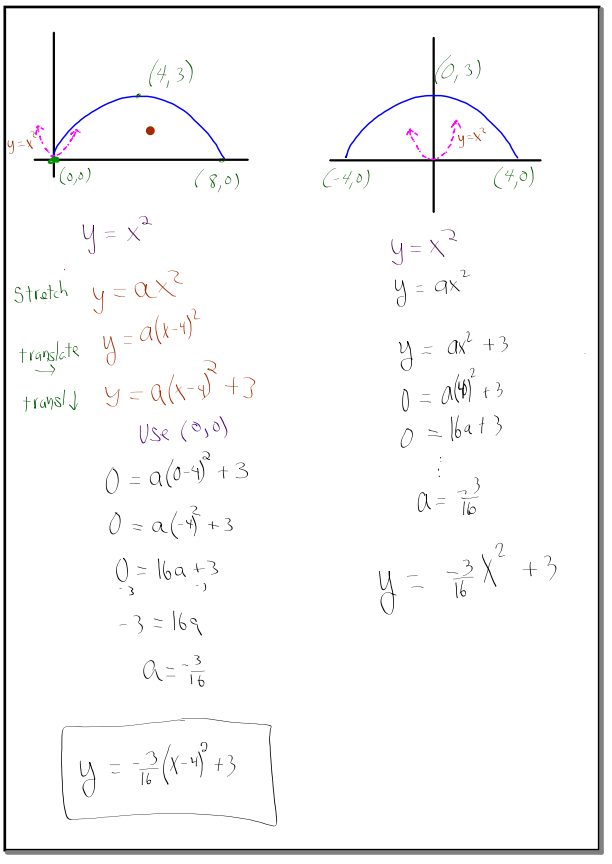
$y = x^2$



$y = x^2$



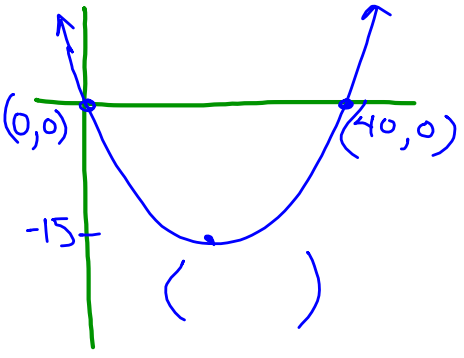



(4,3)
y=x²
(0,0)
(8,0)
(0,3)
y=x²
(-4,0)
(4,0)
y = x²
Stretch y = ax²
translate → y = a(x-4)²
transl ↓ y = a(x-4)² +3
Use (0,0)
0 = a(0-4)² + 3
0 = a(-4)² + 3
0 = 16a + 3
-3 = 16a
a = -3/16
y = -3/16 (x-4)² +3
y = ax² + 3
0 = a(4)² + 3
0 = 16a + 3
a = -3/16
y = -3/16 x² + 3

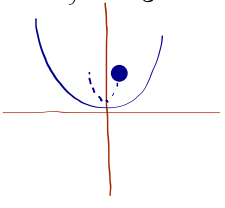
Next....

2-67

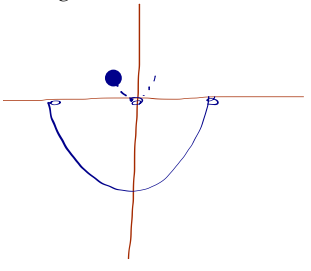
At the skateboard park, the hot new attraction is the *U-Dip*, a cement structure embedded into the ground. The cross-sectional view of the *U-Dip* is a parabola that dips 15 feet below the ground. The width at ground level, its widest part, is 40 feet across. Sketch the cross-sectional view of the *U-Dip*, and find an equation of the parabola that models it.



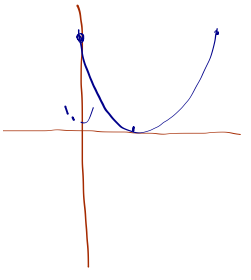
$y = \frac{3}{80}x^2$

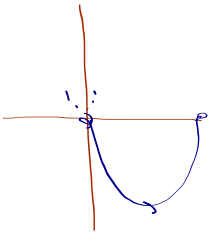


$y = \frac{3}{80}(x)^2 - 15$

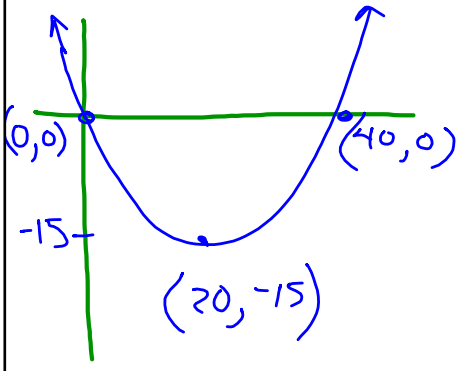


$y = \frac{3}{80}(x-20)^2$





$y = \frac{3}{80}(x-20)^2 - 15$



Model:

$y = a(x-20)^2 - 15$

$0 = a(40-20)^2 - 15$

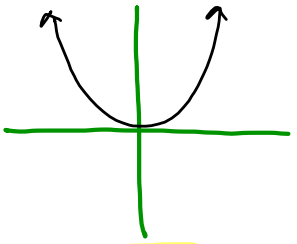
$0 = a \cdot 400 - 15$

$15 = 400a$

$a = \frac{15}{400} = \frac{3}{80}$ .0375

B.B.

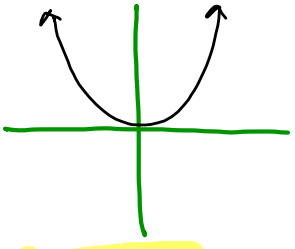
Example of a Parent Graph



$y = x^2$

for a quadratic function

Example of a Parent Graph



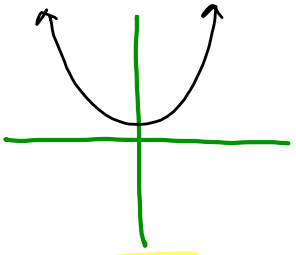
$y = x^2$

for a quadratic function

MAKE Transformations

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

Example of a Parent Graph

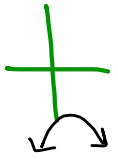


$y = x^2$

for a quadratic function

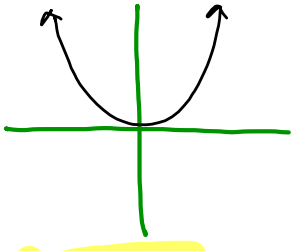
Make Transformations

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



$y = -\frac{1}{2}(x+3)^2 - 7$

Example of a Parent Graph

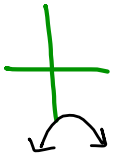


$y = x^2$

for a quadratic function

Make Transformations

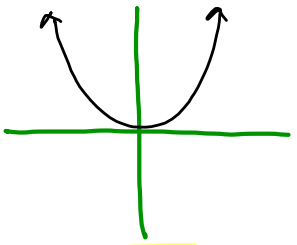
$y = a(x-h)^2 + k$



$y = -\frac{1}{2}(x+3)^2 - 7$

$y = (x+4)^2$

Example of a
Parent Graph

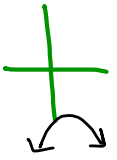


$y = x^2$

for a quadratic function

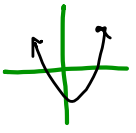
MAKE Transformations

$y = a(x-h)^2 + k$ ← general equation



$y = -\frac{1}{2}(x+3)^2 - 7$

$y = (x+4)^2$



$y = 1.1(x-4)^2 - 5$

Next Few Lessons
(2.2)

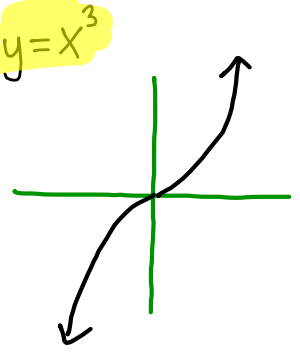
New parent function → Transform

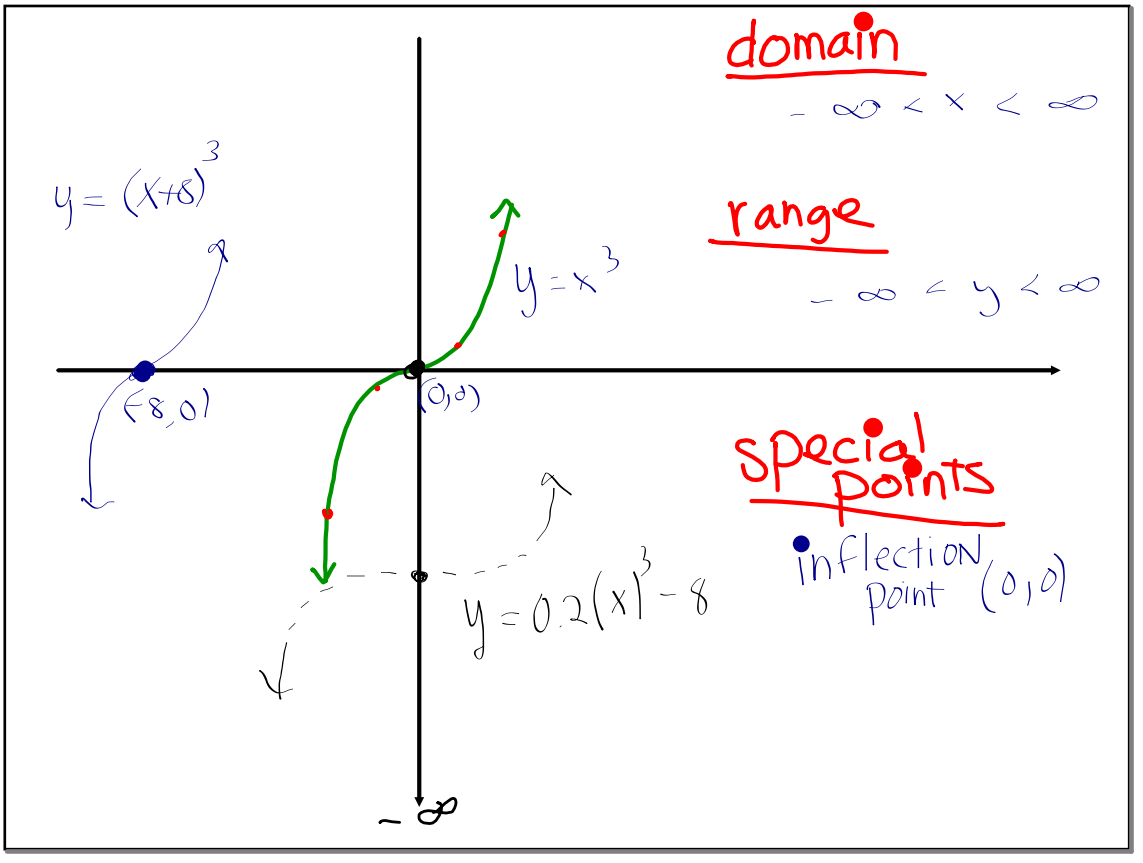
GOAL: Transform any function using same techniques

TODAY'S AIM: Transform $y = x^3$

You'll experiment with Transforming $y = x^3$

QUICK Sketch



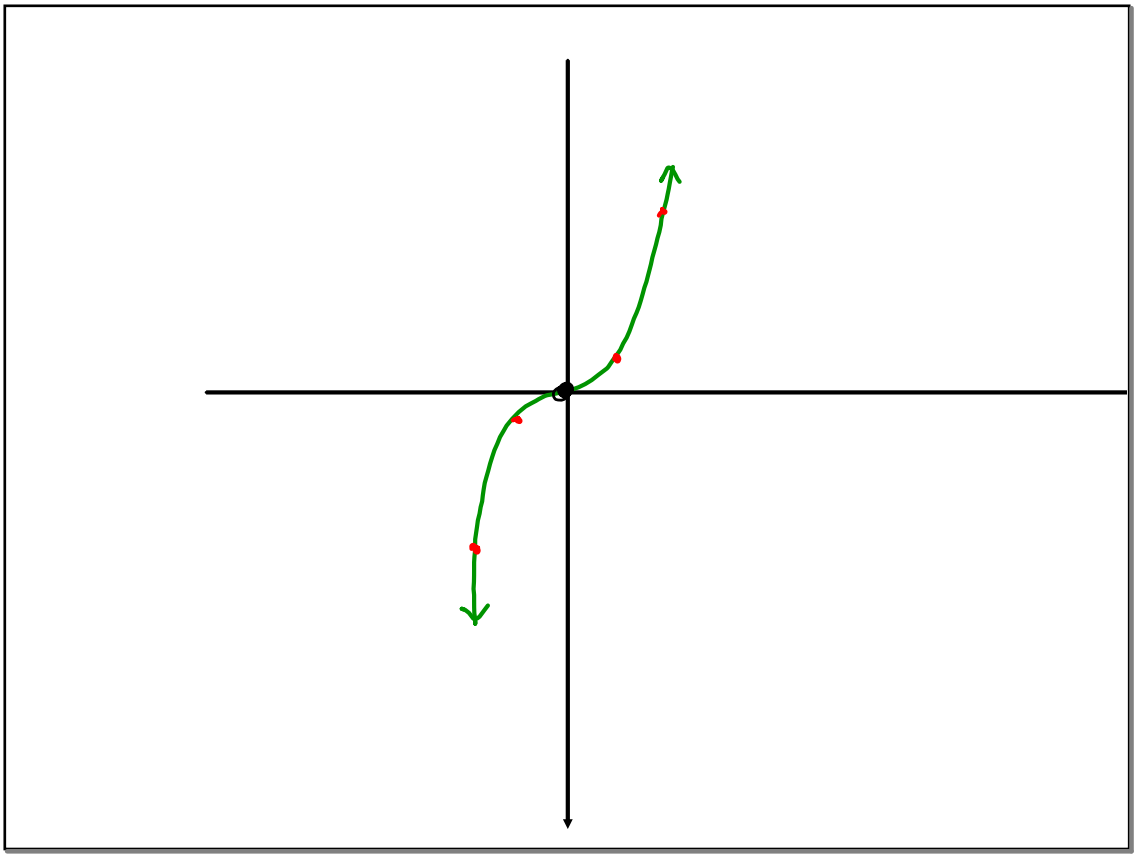


Can make one darker

- $Y_1 =$ ← experimental function
- $Y_2 = x^3$

a) Find and graph an equation that will shift (translate) $y = x^3$ 8 units left. (label the equation next to its graph.

What are the coordinates of the special point (,)



(b) Shift $y = x^3$ down 8 units and vertically shrink by a factor of 0.2

- Graph with a dotted line
- label the equation

(c) Find and graph of a transformation that is translated 7 units right, down 4, and with a negative orientation

(d) Transform $y = x^3$ so it flips upside down

(but you don't need to graph it.

See your LCQ
from Friday

Assignment

2- 69-71, 72a, 73-74, 75a, 91

graph paper needed for #70

Next Test (ch.2)
Thur, Jan 30th