Warm Up (in your notes)

(1) Complete the square to convert

$y = 3x^2 + 2x + 10$ to graphing form.

(2) You'll see in a bit.

(1) Complete the square to convert

$y = 3x^2 + 2x + 10$ to graphing form

divide by 3

$\frac{y}{3} + \frac{1}{9} = \left(x^2 + \frac{2x}{3} + \frac{1}{9}\right) + \frac{10}{3}$

- $\frac{y}{3} + \frac{1}{9} = \left(x + \frac{1}{3}\right)^2 + \frac{10}{3}$

multiply all 4 terms by 9

$3y + 1 = 9\left(x + \frac{1}{3}\right)^2 + 30$

$3y = 9\left(x + \frac{1}{3}\right)^2 + 29$

$y = 3\left(x + \frac{1}{3}\right)^2 + \frac{29}{3}$

Vertex $\left(-\frac{1}{3}, \frac{29}{3}\right)$

(2) Solve the equation

$$2\left(1-\frac{x}{3}\right) = \frac{x}{7} + 3$$

$$2 - \frac{2x}{3} = \frac{x}{7} + 3$$

$$-2 \qquad\qquad -2$$

$$-\frac{2x}{3} = \frac{x}{7} + 1$$

$$-\frac{2x}{3}(21) = \frac{x}{7}(21) + 1(21)$$

$$-14x = 3x + 21$$

$$+14x \qquad +14x$$

$$0 = 17x + 21$$

$$-21 \qquad -21$$

$$-21 = 17x$$

$$x = -\frac{21}{17}$$

(2) Solve the equation

$$2\left(1-\frac{x}{3}\right) = \frac{x}{7} + 3$$

Per. 1 Agenda Today

Hw Tally →

1. Check HW
2. The last 2 new functions
3. LCQ

HW Questions

81

$y = (x)^2$

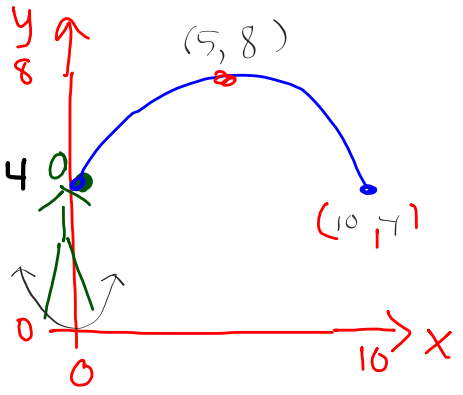
$y = a(x-5)^2 + 8$

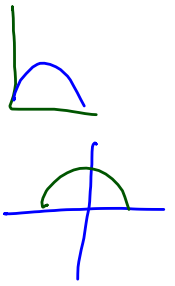
$4 = a(10-5)^2 + 8$

$4 = 25a + 8$

$-4 = 25a$

$a = -\frac{4}{25}$





$y = -\frac{4}{25}(x-5)^2 + 8$

84b

$\sqrt{18}$

$= \sqrt{9}\sqrt{2}$

b)

$\sqrt{27} + \sqrt{12}$

90 think $y = ab^x$

Years 1989 − 1960 = 29 years

$100\% + 3.17\% = 103.17\%$

(a) $y = (1.665 \times 10^{12})(1.0317)^{29} \approx$

(b) $y = (1.665 \times 10^{12})(1.0317)^{t}$

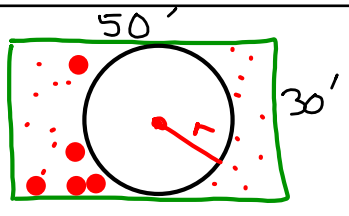
85b)

a) $12250(.89)^{x}$ yearly

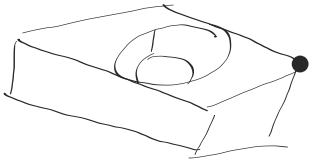
→ b) $y = 1000\left(1 + \frac{.06}{12}\right)^{n}$ ←

86c

$$\left(x^{2}y^{-1}\right)\left(x^{-3}\cdot y\right)^{0}$$



$r = 15$



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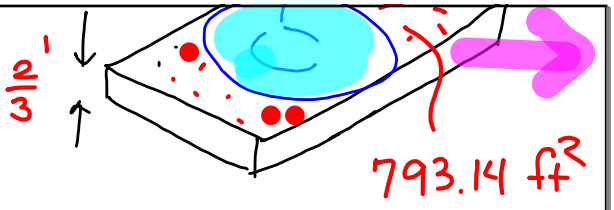
SURFACE AREA (concrete only) = 30 × 50 Area − πr^2 Area

$30(50) - \pi(15)^2$

$= 793.14\ ft^2$ ✓

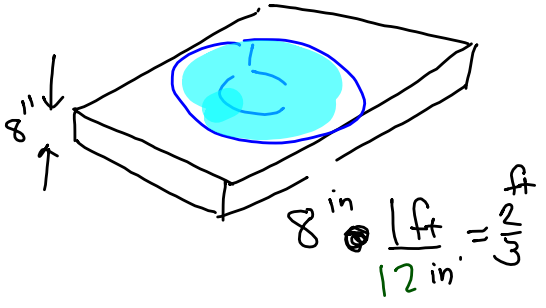
Volume of concrete Slab



$V = 793.14\ ft^2 \times \frac{2}{3}\ ft = 528.76\ ft^3$

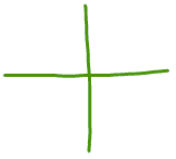
Cost $= 528.76\ ft^3 \times \frac{\$2.39}{ft^3}$

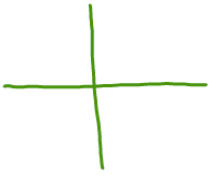
$= \$1,263.74$



Today : Continue to transform the 5 new functions

$y = b^x$ $y = |x|$ $y = \frac{1}{x}$ $\sqrt{x}$

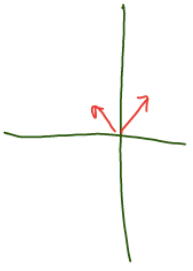


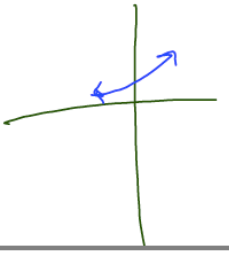


$y = \frac{1}{x}$ $y = \sqrt{x}$

$y = |x|$ $y = b^x$

b could be $\frac{1}{2}$, 2, 3, etc





a) sketch your parent function

b) Write an equation and make a new quick sketch for each of the following:

i) horizontal shift 100 units to the right

ii) horizontal shift left 60 units, down 500

iii) Vertical compression by 0.5 and a vertical shift up 80 and a flip upside down.

each of the following:

i) horizontal shift 100 units to the right

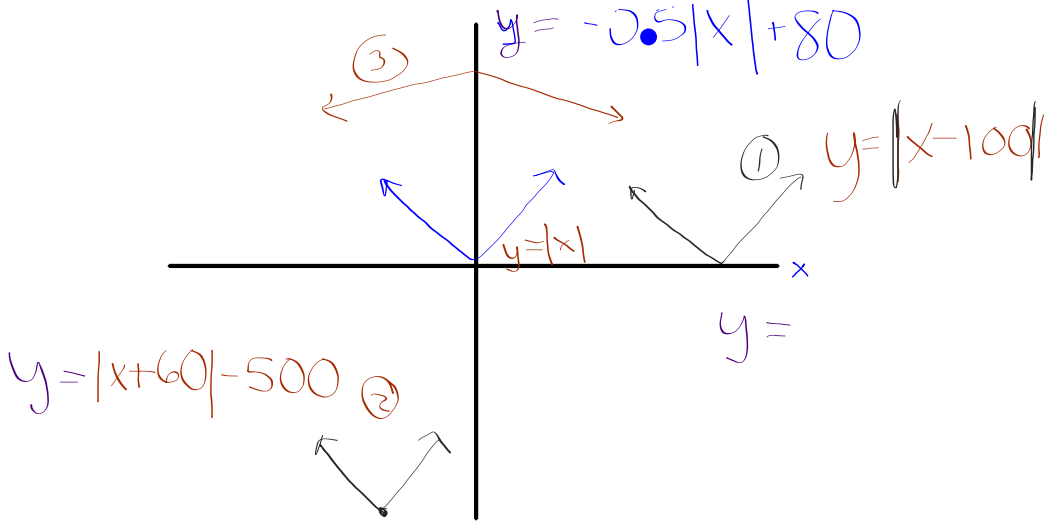
ii) horizontal shift left 60 units, down 500

iii) Vertical compression by 0.5 and a vertical shift up 80 and a flip upside down.

the Absolute Value Function

$y = |x|$ domain

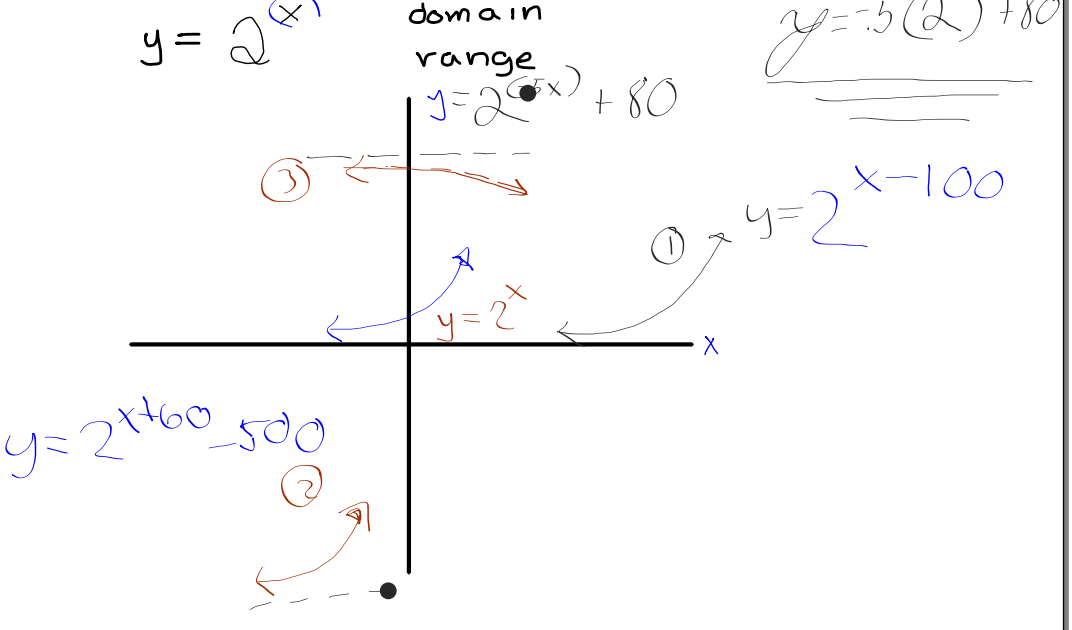
range

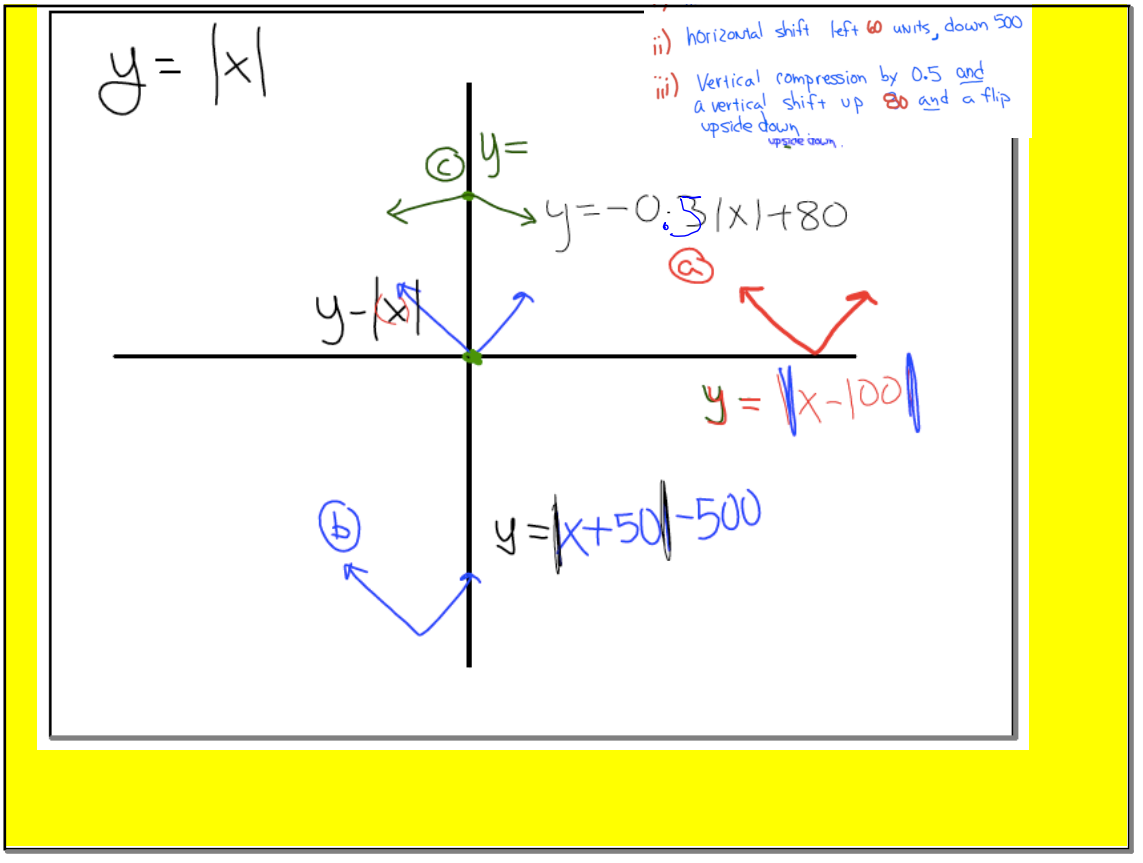


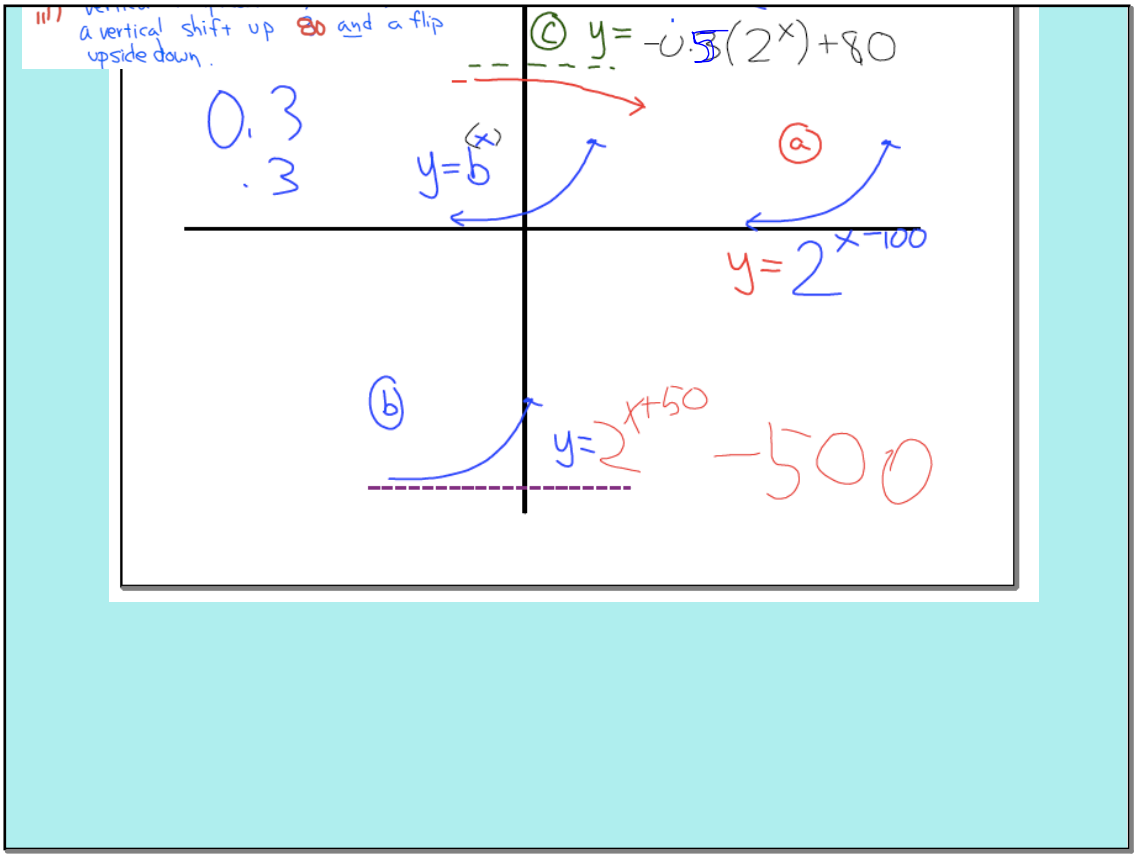
the Exponential Function

$y = 2^{(x)}$ domain

range




y = |x|
ii) horizontal shift left 60 units, down 500
iii) Vertical compression by 0.5 and a vertical shift up 80 and a flip upside down.
upside down.
c
y=
y=-0.5|x|+80
a
y=|x|
y=|x-100|
b
y=|x+50|-500


a vertical shift up 80 and a flip upside down.
c y=-0.5(2^x)+80
0.3
.3
y=b^x
a
y=2^(x-100)
b
y=2^(x+50)-500

Homework is a worksheet

Assignment 2.2.1 day 2