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.

↑ A tough Question!

(1) Complete the square to convert $y = 3x^2 + 2x + 10$ to graphing form.

Divide all terms by 3

$\frac{y}{3} + \frac{1}{9} = x^2 + \frac{2}{3}x + \frac{10}{3}$ $\quad \frac{1}{2} \cdot \frac{2}{3} = \frac{1}{3}x$

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

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

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

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

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

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

(2) Solve the equation

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

$\frac{2}{1}\cdot\frac{1}{3}$

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

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

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

$-3x \quad -3x$

$$-17x=21$$

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

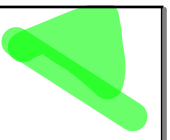
(2) Solve the equation

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

$$1-\frac{x}{3}=\frac{x}{14}+\frac{3}{2}$$

(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

82 a) intercepts $y = 2x^2 + 3x + 1$

84 d

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

4

9

16

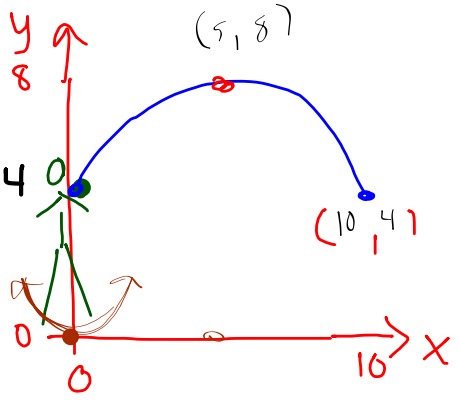
81

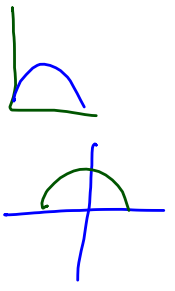
$y = a(x)^2$

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

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

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





84b $\sqrt{18}$

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

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

90 think $y = ab^x$

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

Years 1989 − 1960 = 29 years

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

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

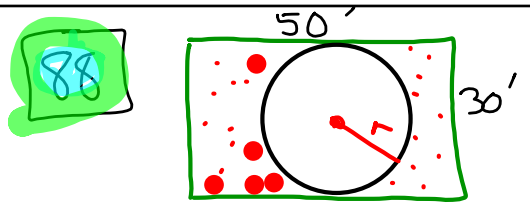
85b)

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

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

86c

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

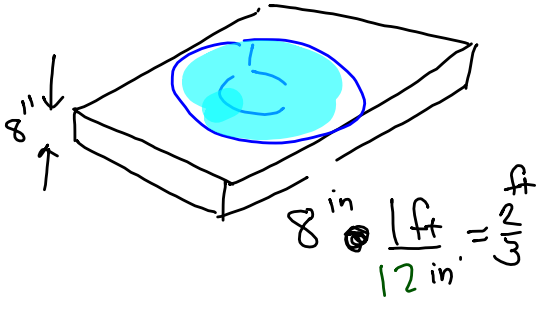


12

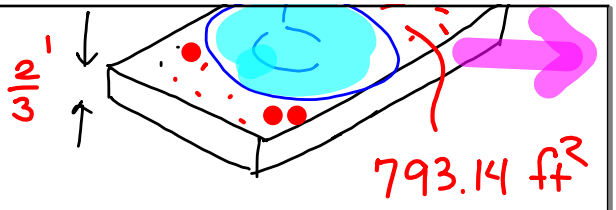
SURFACE AREA (concrete only) = 30 [Area 50] − [Area 15]

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

$= 793.14\ ft^2$ ✓



Volume of concrete Slab



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

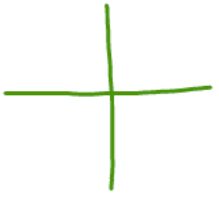
Cost $= 528.76\ ft^3 \times \frac{\$2.39}{ft^3}$

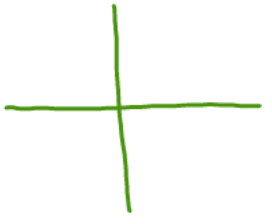
$= \$1,263.74$

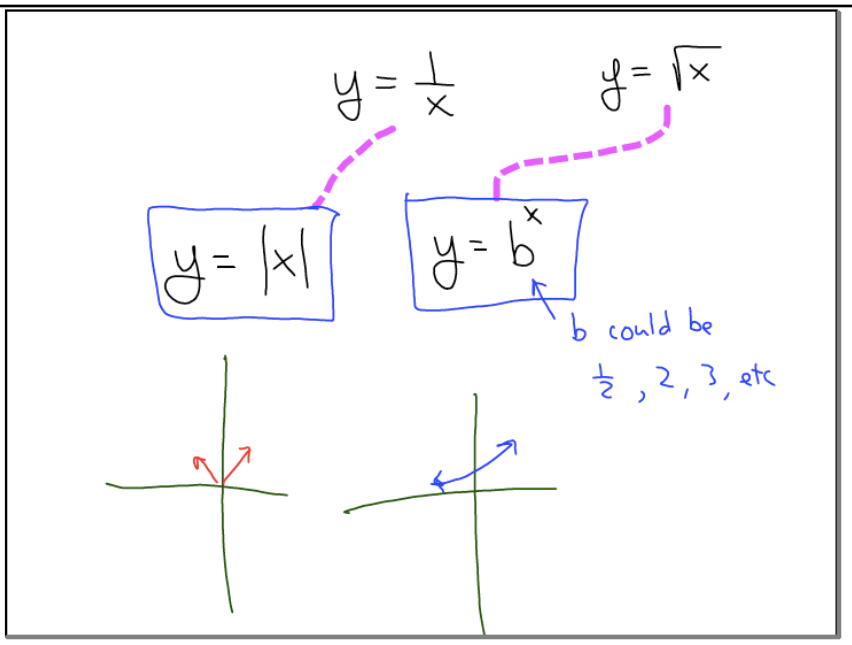
Today: Continue to transform the 5 new functions

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

$\sqrt{x}$

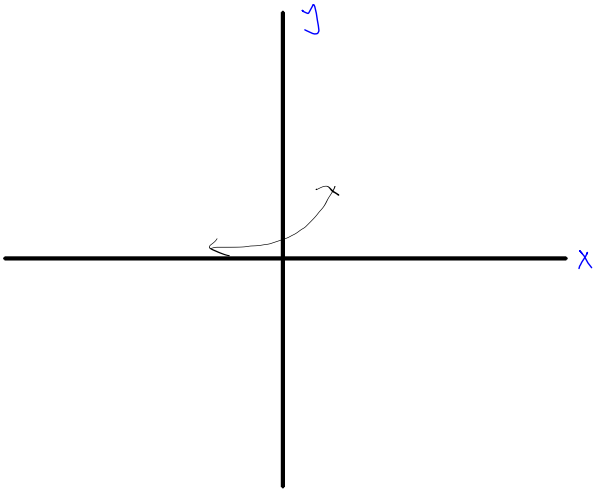






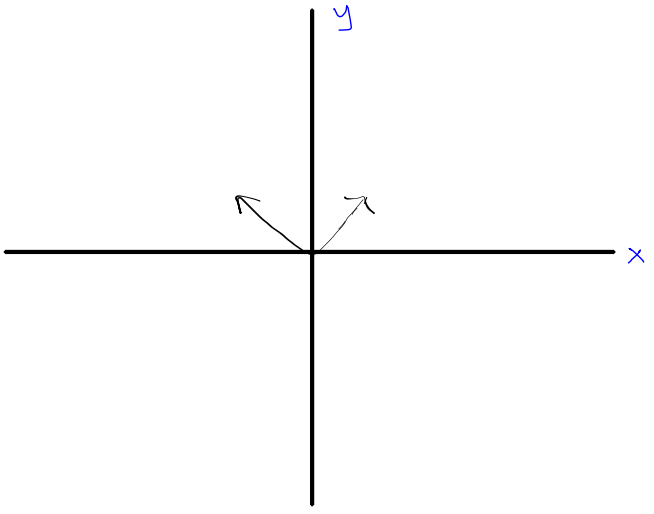
the Exponential Function

$y = 2^x$



the Absolute Value Function

$y = |x|$



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.

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

i) horizontal shift 100 units to the right

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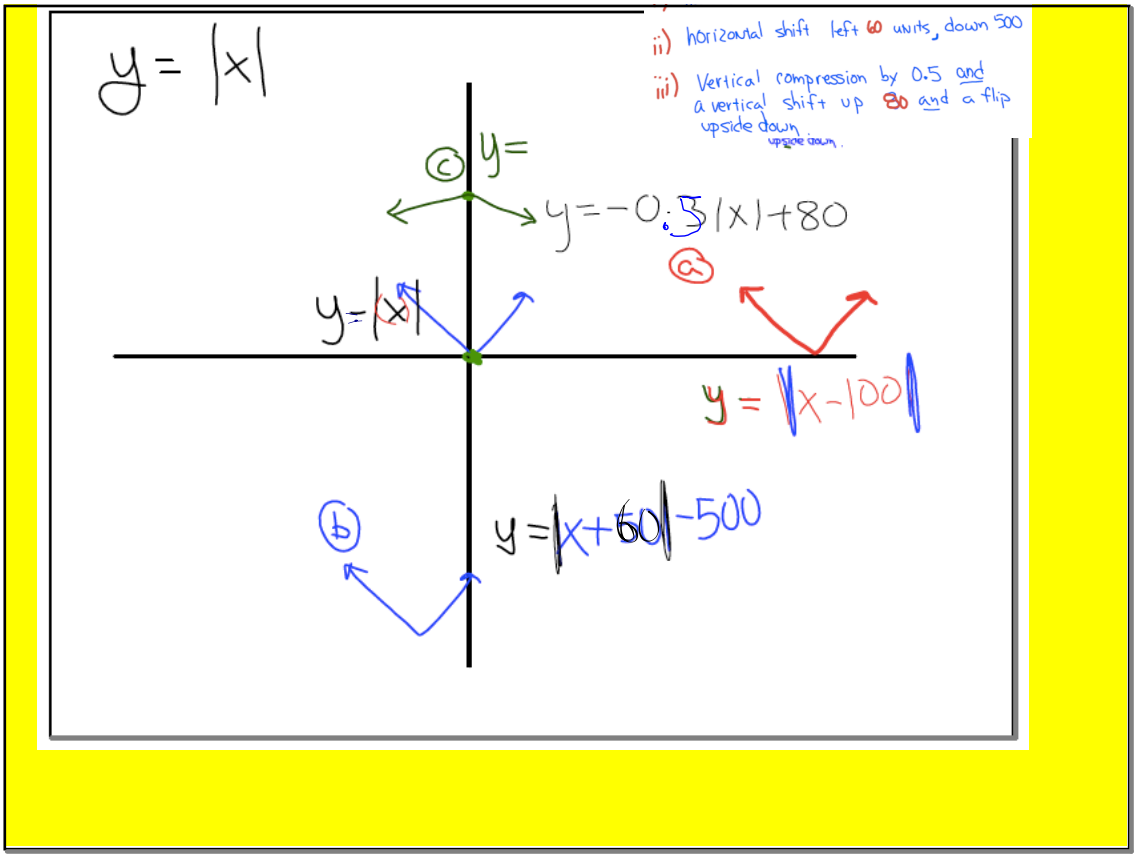
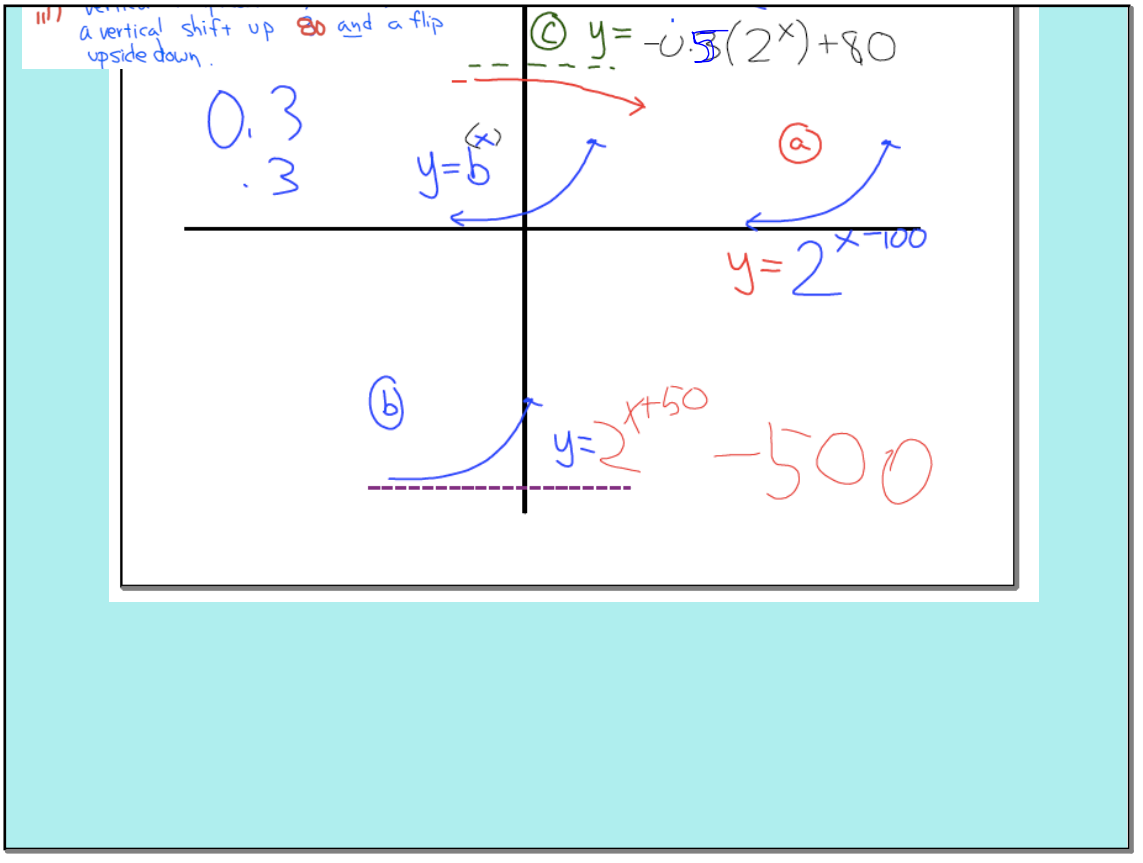
B.B


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+60|-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

$y = |x|$ $\quad y = a|x-h|+k$

a
h
k

$y = 2^x$ $\quad y = a(2^{x-h})+k$

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

LCQ

Homework is a worksheet

Assignment 2.2.1 day 2

y-intercept

the first part of #6 should be y-intercept, not x-intercept.

(6) Algebraically find the exact y-intercept for $f(x) = \frac{\sqrt{x+4}}{3} - 2$

Now find the exact x-intercept(s) for $f(x) = \frac{\sqrt{x+4}}{3} - 2$