PRE–AP ALGEBRA 2 HOMEWORK #2A

Lesson 2A.1:

For problems **1** and **2**, given $y = y(x)$, state

i) the x– and y–intercepts, and
ii) the domain and range.

1) **a)** $y = x^2 - 8x + 7$
b) $y = x^2 - 8x + 25$

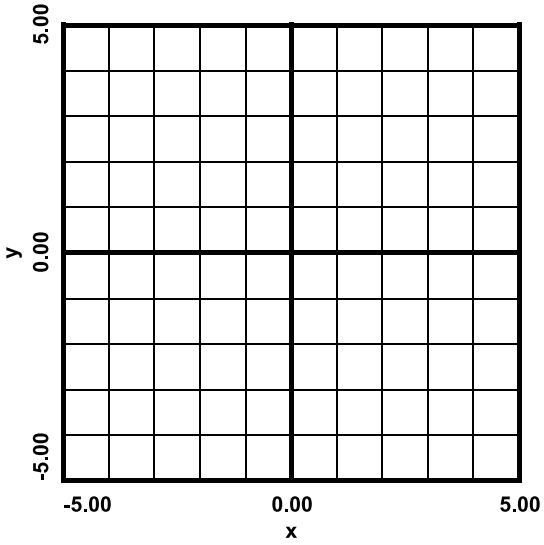
2) **a)** $y - 6 = |x - 2|$
b) $y + 6 = |x + 2|$

3) For $y = 2 - \sqrt{4 - x}$:

a) Fill in the table.

x	y
−5	
0	
3	
4	

b) Graph $y = y(x)$.



c) State the domain and range of $y = y(x)$.

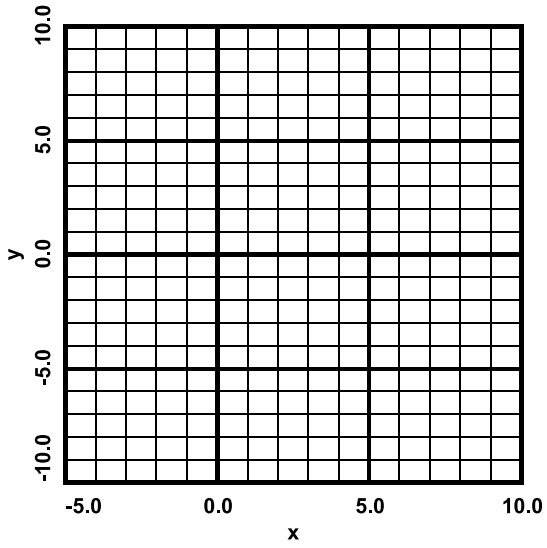
Lesson 2A.2:

4) For $y = f(x) = x^2 - 8x + 7$:

a) Fill in the table.

x	$f(x)$	$\lvert f(x)\rvert$
0		
1		
2		
3		
4		
5		
6		
7		
8		

b) Graph both $y = f(x)$ and $y = |f(x)|$.



c) For both $y = f(x)$ and $y = |f(x)|$, state the domain and range.

Lesson 2A.3:

5) For $f(x) = x^2 - 11x + 37$ and $g(x) = 5x - 8$, calculate

a) $f\big(g(x)\big)$
b) $g\big(f(x)\big)$
c) $f\big(g(3)\big)$
d) $g\big(f(3)\big)$

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6) A car gets 40 miles per gallon of gas.

Let

m ≡ miles driven
k ≡ kilometers driven
g ≡ gallons of gas used
l ≡ liters of gas used

a) Write the function $m = m(g)$.

b) Given that 1 liter = 0.2642 gallons, write the function $g = g(l)$.

c) Construct the function $m\big(g(l)\big) = m(l)$.

d) Given that 1 mile = 1.609 kilometers, write the function $k = k(m)$.

e) Construct the function $k = k\big(m(l)\big) = k(l)$ and explain its meaning.

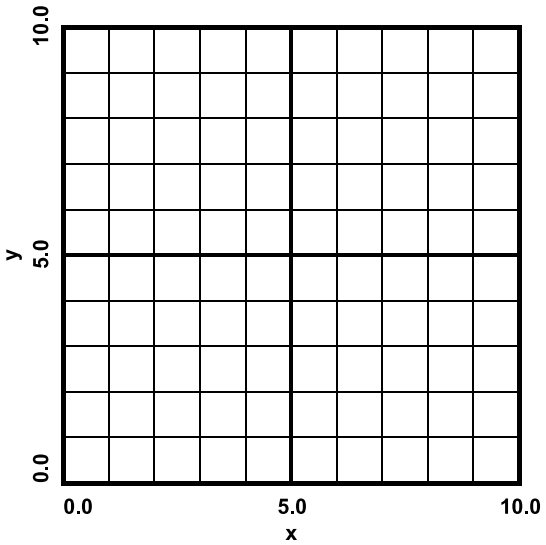
Lesson 2A.4:

7) For $y = f(x) = x^2 - 12x + 37$:

a) Graph $y = f(x)$ on the axes provided.

b) Construct a function $y = g(x)$ which is obtained by translating $y = f(x)$ by $(-4,5)$.

c) Verify the translation by graphing $y = g(x)$ on the axes provided.



Lesson 2A.5:

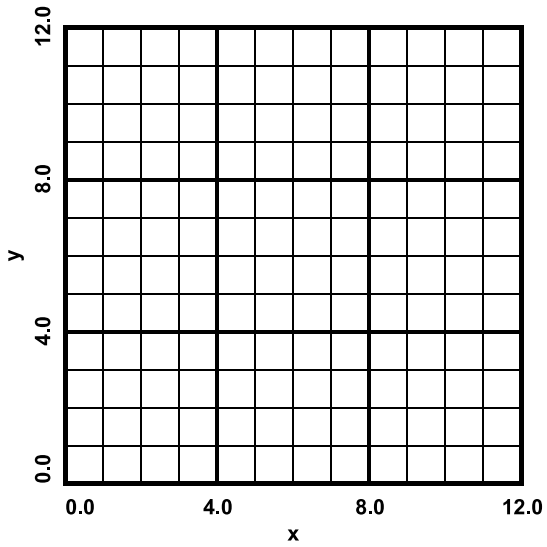
8) **a)** Graph $y = f(x) = \frac{1}{2}x^2 - 8x + 34$ on the axes provided.

b) Construct a function $y = g(x)$ which is a vertical stretch, by a factor of 2, of $y = f(x)$.

c) Graph $y = g(x)$ on the axes provided.

d) Construct a function $y = h(x)$ which is a translation of $y = g(x)$ by $(-5, -3)$.

e) Graph $y = h(x)$ on the axes provided.



9) The transformation of $y = f(x)$ to $y = h(x)$ in problem **8** is equivalent to:

a) Construct a function $y = k(x)$ which is a translation of $y = f(x)$ by $(-5, -1.5)$.

b) Graph $y = k(x)$ on the axes in problem **8**.

c) Verify that $y = h(x)$ is a vertical stretch, by a factor of 2, of $y = k(x)$.

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Lesson 2A.6:

10) For $y = f(x) = \frac{1}{3}x^2 - 4x + 15$:

a) Construct a function $y = g(x)$ which is a horizontal compression of $y = f(x)$ by a factor of $\frac{1}{3}$.

b) Construct a function $y = h(x)$ which is a translation of $y = g(x)$ by $(7, -2)$.

11) The transformation of $y = f(x)$ to $y = h(x)$ in problem **10** is equivalent to:

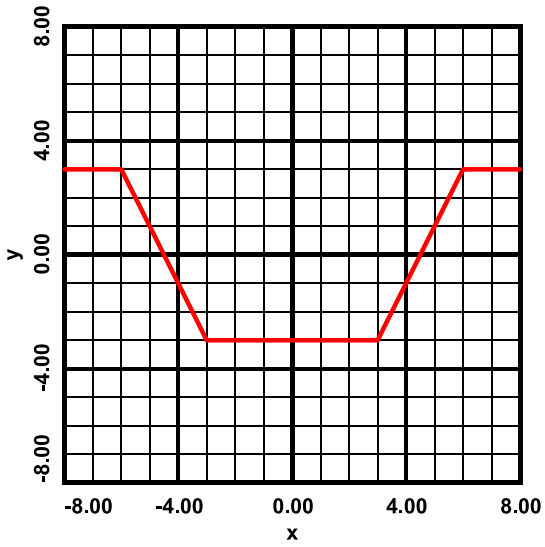
a) Construct a function $y = k(x)$ which is a translation of $y = f(x)$ by $(21, -2)$.

b) Verify that $y = h(x)$ is a horizontal compression of $y = k(x)$ by a factor of $\frac{1}{3}$.

Lesson 2A.7:

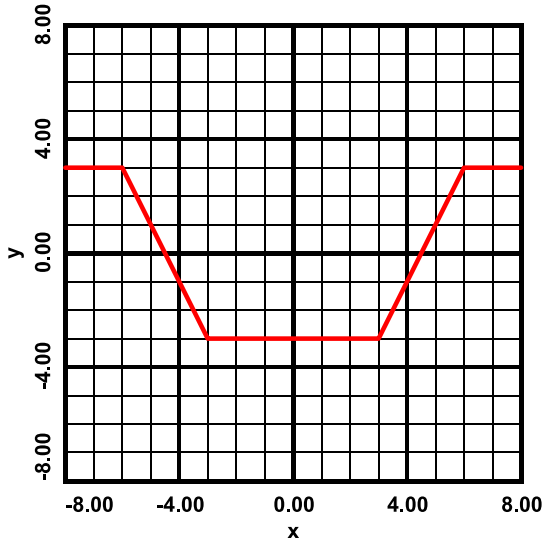
For problems **12** through **14**, given $y = f(x)$ as plotted, graph the indicated function $y = g(x)$.

12) $g(x) = f(x - 1) + 4$



13) $g(x) = -2f(x + 1) + 1$

Hint: graph $y = -2f(x)$ first.



14) $g(x) = f(3x - 4) + 3$

Hint: graph $y = f(3x)$ first.