

Unit 2A

Review Solutions

1a) Domain: $[-7, \infty)$ Range: $[-6, \infty)$

1b) Domain: $(-\infty, \infty)$ Range: $(-\infty, 6]$

1c) $\{ y = (x+1)(x+5) \}$

1d) $y = (x+3)^2 - 4$

1e) vertex: $(3, 8)$

1f) Shrunk by $1/4$, Left 5, Down 3

1g) $\frac{x \ 6}{6 \cdot 1 \ x} \quad \frac{+5}{6+1 \ x}$
 $\bullet 2 \cdot 3 \checkmark \quad 2+3 \checkmark$

$y = (x+2)(x+3)$

	x	2	
x	x^2	$+2x$	check it!
3	$+3x$	$+6$	

$x^2 + 2x + 3x + 6$
 $x^2 + 5x + 6 \checkmark$

1h) $y = -(x-3)$

↑ shift right.

$y = -(x-2)$

↑ Reflection

$y = -(x-\#)$
 any # will work.

1.) $y = 3(x)^2 + 5$

↑ stretch by 3
 ↑ up 5
 No movement left or right

2a) $y = -2(x+1) + 3$

↑ having a sad day he is frowning
 ↑ left 1
 stretch by 2
 VP 3

I can see this by double checking points - Visually he has gotten "skinner"

2b) $y = 20x^2 - 3x - 2$

$20x^2 - 8x + 5x - 2$

$4x(5x-2) + 1(5x-2)$

$y = (5x-2)(4x+1)$

	+(-3)	*(-40)
x	1	40 ✗
x	2	20 ✓
x	4	10 ✓
	-8+5 ✓	5·8 ✓

2c) $y = x^2 - 64$

Either Notice: $y = (x+8)(x-8)$
 $a = x \quad b = 8$

Difference of Two Squares 

OR

$$\begin{array}{r} x^2 - 8x + 8x - 64 \\ \hline \end{array}$$

$$x(x-8) + 8(x-8)$$

$$y = (x-8)(x+8)$$

+0x	* (-64)	
x	1	64 ✗
x	2	32 ✓
x	4	16 ✓
-8+8 ✓	8	8 ✓

2d) $y = (x+3)^2 - 10$

$$y = (x^2 + 6x + 9) - 10$$

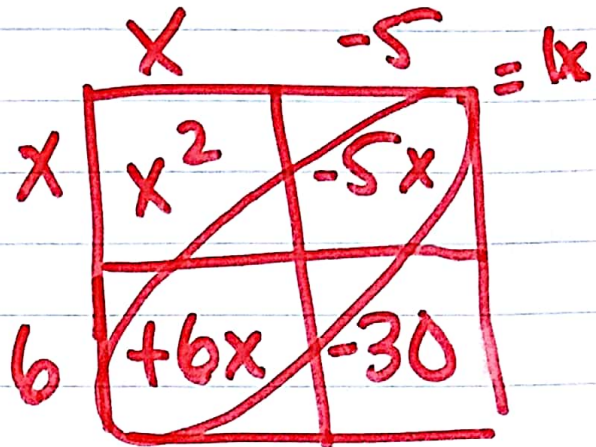
$$y = x^2 + 6x - 1$$

	x	3	= 6x
x	x^2	$+3x$	
3	$+3x$	$+9$	

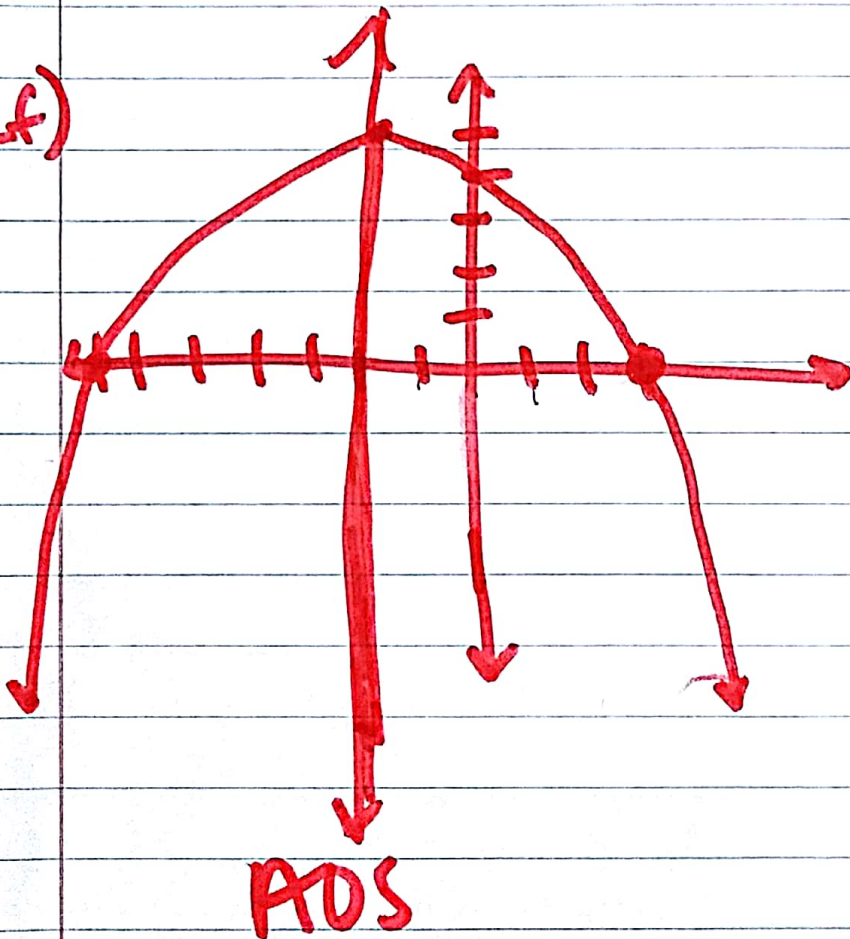
2e) $y = (x-5)(x+6)$

$y = x^2 - 5x + 6x - 30$

$y = x^2 + x - 30$



2f)



* Roots should be equal distance from the axis of symmetry (AOS)

Stretch by 2



3a) $y = -2x^2 + 6$

↑
reflect
over x

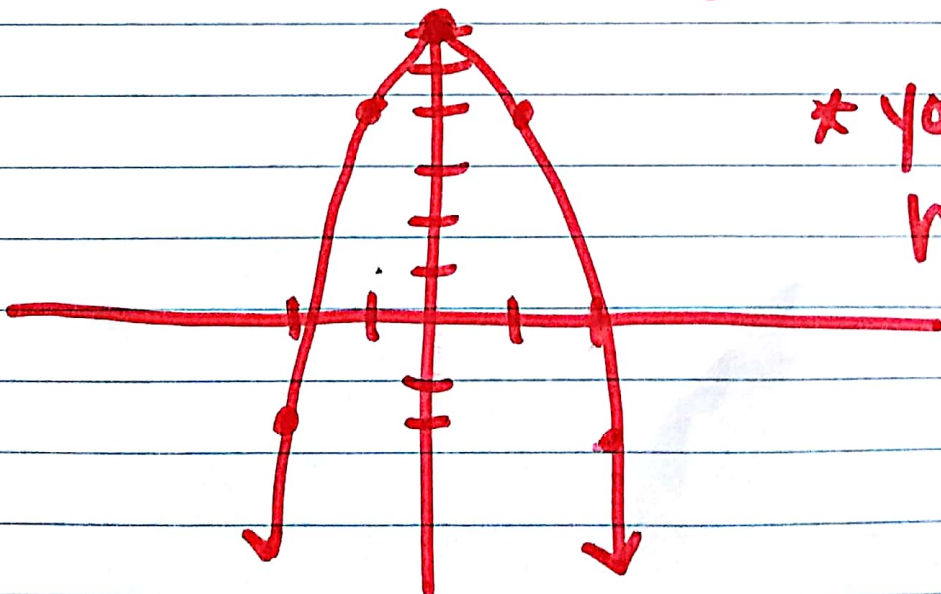
↑ shifted up 6

I add 2 numbers above and below vertex

x	y
-2	-2
-1	4
0	6
1	4
2	-2

← I start with the vertex by looking at equation noting with k means $x=0$ and $(+6)$ means $y=6$

↑
plug values into equation to get your y's



* you should have at least 5 points

got this from
x-intercepts

3b) $y = (x+2)(x-7)$

now to standard...

	x	+2	
x	x^2	$+2x$	= $-5x$
-7	$-7x$	-14	

$y = x^2 - 5x - 14$

3c) $y = 6x^2 - 39x + 63$

$y = 3(2x^2 - 13x + 21)$

factor out GCF first to make it easier.

$3[2x^2 - 6x - 7x + 21]$

$3[2x(x-3) - 7(x-3)]$

$y = 3(x-3)(2x-7)$

$+(-13)$	\neq	42
x		1 · 42 ✓
x		2 · 21 ✓
x		3 · 14 ✓
$-6 + -7$		6 · 7 ✓

3c) OR $y = 6x^2 - 39x + 63$

$$6x^2 - 21x - 18x + 63$$

$$3x(2x-7) - 9(2x-7)$$

$$(3x-9)(2x-7)$$

$$\boxed{3(x-3)(2x-7)}$$

$+(-39)$	x	378
$-21-18$		$21 \cdot 18$

OR

$$6x^2 - 18x - 21x + 63$$

$$6x(x-3) - 21(x-3)$$

$$(6x-21)(x-3)$$

$$\boxed{3(2x-7)(x-3)}$$