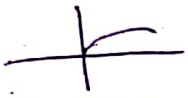
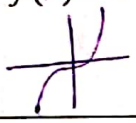
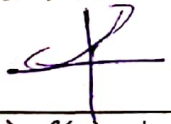
Algebra 2 Trig – Function Review Name Key

1. Complete the following chart. Sketch the general shape under the function.

Parent Function (draw general shape)	Domain & Range	End Behavior	Translated Form (use h & k)
a) $f(x) = x^4$ 	D: $\mathbb{R}$ R: $\mathbb{R} \geq 0$	increase	$y = (x-h)^4 + k$
b) $f(x) = \frac{1}{x}$ 	D: $\mathbb{R}$ except $x \neq 0$ R: $\mathbb{R}$ except $y \neq 0$		$y = \frac{1}{x-h} + k$
c) $f(x) = \log_3 x$ 	D: $\mathbb{R} > 0$ R: $\mathbb{R}$		$y = \log_3(x-h) + k$
d) $f(x) = \sqrt{x}$ 	D: $\mathbb{R} \geq 0$ R: $\mathbb{R} \geq 0$		$y = \sqrt{x-h} + k$
e) $f(x) = x^3$ 	D: $\mathbb{R}$ R: $\mathbb{R}$		$y = (x-3)^3 + 2$
f) $f(x) = x^2$ 	D: $\mathbb{R}$ R: $\mathbb{R}$		$y = (x-h)^2 + k$
g) $f(x) = 3^x$ 	D: $\mathbb{R}$ R: $\mathbb{R} > 0$		$y = 3^{x-h} + k$
h) $f(x) = \lvert x \rvert$ 	D: $\mathbb{R}$ R: $\mathbb{R} \geq 0$		$y = \lvert x-h \rvert + k$
i) $f(x) = \sqrt[3]{x}$ 	D: $\mathbb{R}$ R: $\mathbb{R}$		$y = \sqrt[3]{x-h} + k$

2. Using the functions from the previous problem, explain why there are asymptotes in graphs of the following functions. Be as precise as possible.

1b) Denominator cannot be zero

1c) log cannot be negative

1g) horizontal asymptote

3. What is an intercept on a graph? x intercept (3,0)

Where it crosses the x or y axis: y-intercept (0,3)

4. How do you find an intercept algebraically?

5. Find 3 key points for the following functions.

a) $f(x)=-2x^2+3x-4$

x	y
-1	-9
1	-3
2	-6

b) $f(x)=2\sqrt[3]{x+2}-1$

x	y
-3	-3
-1	1
6	3

c) $f(x)=\frac{3}{x+4}-2$

x	y
-5	-5
-2	-2.5
0	-1.25

6. Match the statement with its graph.

C 1. $f(x)=-2x+1$

e 2. $f(x)=-(x-2)^2$

j 3. $f(x)=(x-1)(x+2)(x-4)$

b 4. $f(x)=x^4-1$

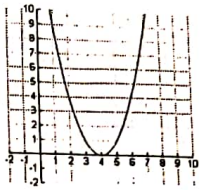
k 5. $f(x)=|x+4|$

f 6. $y\geq 3x-1$

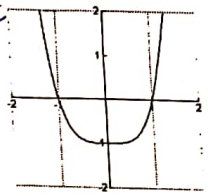
h 7. This graph is not a function.

i 8. $f(x)=\begin{cases}2 \text{ if } 0\leq x<1\\ 3 \text{ if } 1\leq x\leq 2\end{cases}$

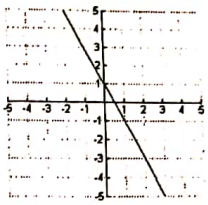
a)



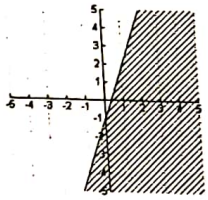
b)



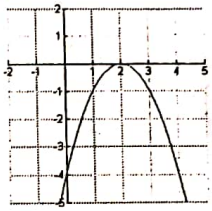
c)



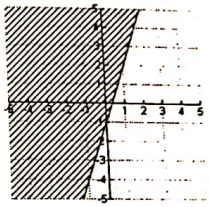
d)



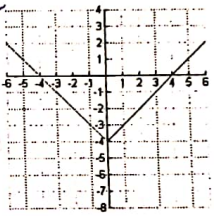
e)



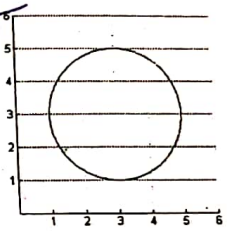
f)



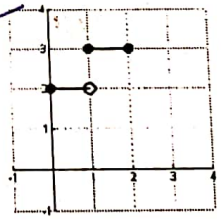
g)



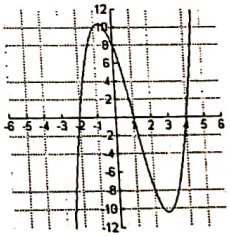
h)



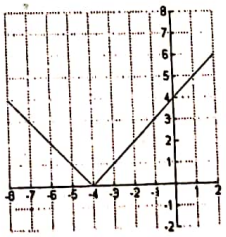
i)



j)

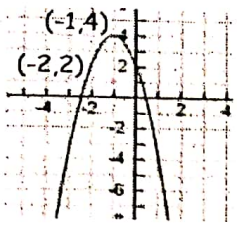


k)



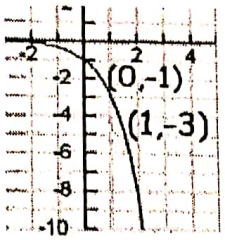
9. Match each graph with its function. Then state the domain and range of each function.

a)



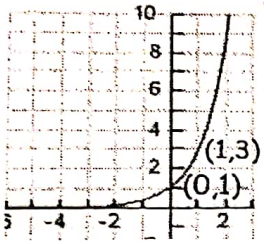
Equation $y=-2(x+1)^2+4$
Domain $\mathbb{R}$
Range $\mathbb{R} \leq 4$

b)



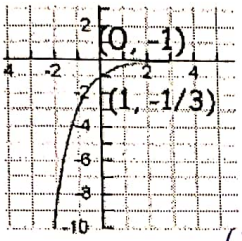
Equation $y=-3^x$
Domain $\mathbb{R}$
Range $\mathbb{R} < 0$

c)



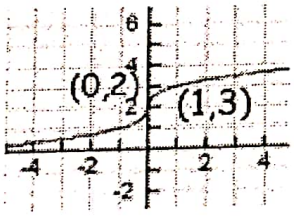
Equation $y=3^x$
Domain $\mathbb{R}$
Range $\mathbb{R} > 0$

d)



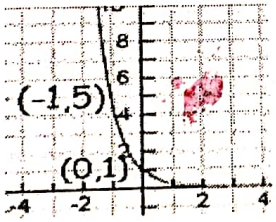
Equation $y=\left(\frac{1}{3}\right)^x$
Domain $\mathbb{R}$
Range $\mathbb{R} < 0$

e)



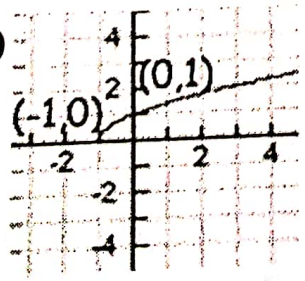
Equation $y=\sqrt[3]{x}+2$
Domain $\mathbb{R}$
Range $\mathbb{R}$

f)



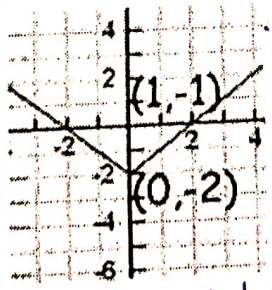
Equation $y=\left(\frac{1}{5}\right)^x$
Domain $\mathbb{R}$
Range $\mathbb{R} > 0$

g)



Equation $y=\sqrt{x+1}$
Domain $\mathbb{R} \geq -1$
Range $\mathbb{R} \geq 0$

h)



Equation $y=|x|-2$
Domain $\mathbb{R}$
Range $\mathbb{R} > -2$

Answer Choices for #9

i. $y=(x-2)^2-2$

ii. $y=-(x+1)^2+4$

~~iii.~~ $y=-2(x+1)^2+4$

~~iv.~~ $y=\sqrt[3]{x}+2$

~~v.~~ $y=\sqrt{x+1}$

vi. $y=\sqrt[3]{x}-2$

vii. $y=\sqrt{x-1}$

viii. $y=-\left(\frac{1}{5}\right)^x$

~~ix.~~ $y=\left(\frac{1}{5}\right)^x$

x. $y=|x-2|$

~~xi.~~ $y=|x|-2$

~~xii.~~ $y=3^x$

xiii. $y=\frac{1}{2(3^x)}$

~~xiv.~~ $y=-3^x$

xv. $y=2(3^x)$

xvi. $y=\left(\frac{1}{3}\right)^x$

~~xvii.~~ $y=-\left(\frac{1}{3}\right)^x$

xviii. $y=\log_3 x$

xix. $y=\log_{1/3} x$

xx. $y=\frac{1}{x+3}+3$