

1. Describe the following transformations in words.

a)  $y=f(x-4)$

Shift Right  
by 4

b)  $y=f(x)+5$

Shift Up  
by 5

c)  $y=f(-x)$

H. Flip

d)  $y=3f(x)$

V. Stretch  
by 3

e)  $y=\frac{1}{4}f(x)$

V. Compression  
by  $\frac{1}{4}$

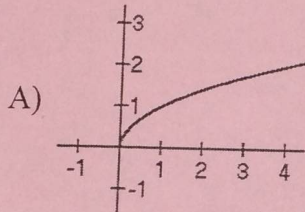
f)  $y=-f(x)$

V. Flip

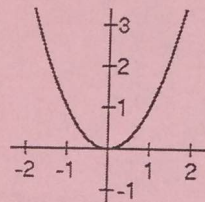
2. Fill in each blank with the parent function that corresponds to each of the graphs given below.

$f(x)=\sqrt{x}$

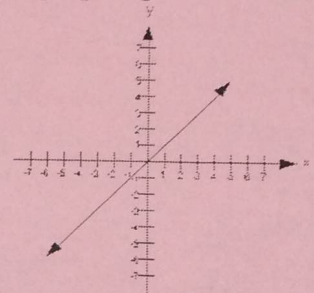
A)



B)



C)



$f(x)=x^2$

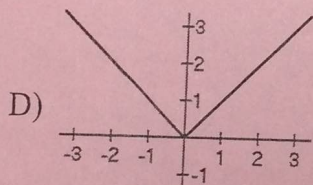
B)

$f(x)=x$

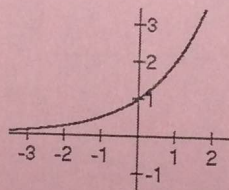
C)

$f(x)=|x|$

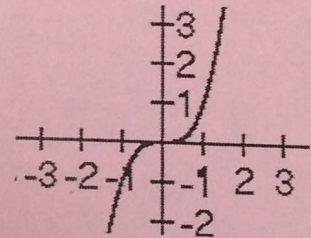
D)



E)



F)



$f(x)=2^x$

E)

$f(x)=x^3$

F)

List the attributes for the following functions.

3.  $y=(x+4)^2-1$  Domain:  $(-\infty, \infty)$

Range:  $[-1, \infty)$

Increasing:  $(-4, \infty)$

Decreasing:  $(-\infty, -4)$

EB LH: as  $x \rightarrow -\infty, f(x) = \infty$

EB RH: as  $x \rightarrow \infty, f(x) = \infty$

4.  $y=\sqrt{x-2}+3$

Domain:  $[2, \infty)$

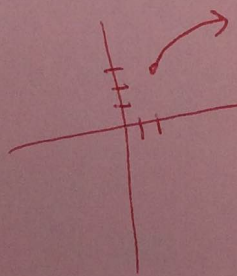
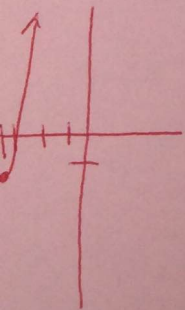
Range:  $[3, \infty)$

Increasing:  $(2, \infty)$

Decreasing: Never

EB LH: None

EB RH: as  $x \rightarrow \infty, f(x) = \infty$





Given the parent function  $f(x)$ , write the equation that contains the given transformations.

5.  $f(x) = \sqrt{x}$

- Vertical Translation down two units  $-2$
- Reflection across the  $x$ -axis  $\text{vertical } x-1$

$f(x) = -\sqrt{x} - 2$

6.  $f(x) = |x|$

- Horizontal translation left 3
- Vertical Translation up 4 units

$f(x) = |x+3| + 4$

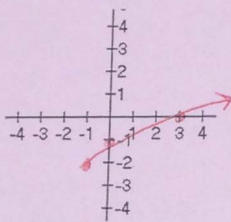
7.  $f(x) = 2^x$

- Vertical stretch by a factor of 2
- Horizontal Translation right 3 units

$f(x) = 2(2^{x-3})$

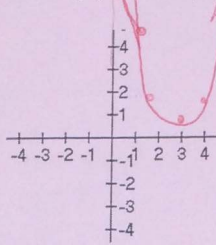
Graph the following functions. Next, identify the parent function, list the transformations involved.

8.  $g(x) = \sqrt{x+1} - 2$



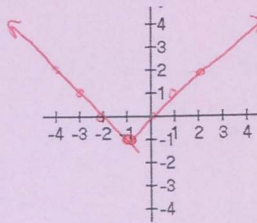
Parent Function:  $\sqrt{x}$

9.  $h(x) = (x-3)^2 + 1$



Parent Function:  $x^2$

10.  $f(x) = |x+1| - 1$



Parent Function:  $|x|$

List the transformations in words:

- a) Shift Left 1  
b) Shift Down 2

List the transformations in words:

- a) Shift Right 3  
b) Shift Up 1

List the transformations in words:

- a) Shift Left 1  
b) Shift Down 1

Domain:  $[-1, \infty)$

Range:  $[-2, \infty)$

x-int:  $(3, 0)$

y-int:  $(0, -1)$

EBLH: None

EBRH: as  $x \rightarrow \infty$ ,  $f(x) \rightarrow \infty$

Inc:  $(-1, \infty)$

Dec: Never

Domain:  $(-\infty, \infty)$

Range:  $[1, \infty)$

x-int: None

y-int:  $(0, 10)$

EBLH: as  $x \rightarrow \infty$ ,  $f(x) = \infty$

EBRH: as  $x \rightarrow \infty$ ,  $f(x) = \infty$

Inc:  $(3, \infty)$

Dec:  $(-\infty, 3)$

Domain:  $(-\infty, \infty)$

Range:  $[-1, \infty)$

x-int:  $(-2, 0), (0, 0)$

y-int:  $(0, 0)$

EBLH: as  $x \rightarrow -\infty$ ,  $f(x) = \infty$

EBRH: as  $x \rightarrow \infty$ ,  $f(x) = \infty$

Inc:  $(-1, \infty)$

Dec:  $(-\infty, -1)$

+ values