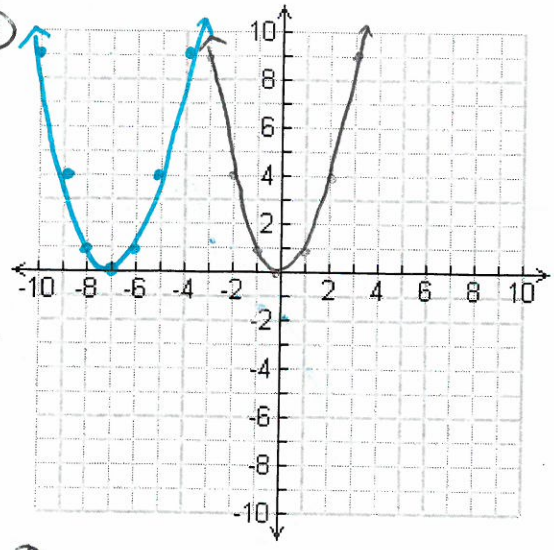
Lesson 3: Practice 3 (18-32 even)

(18)



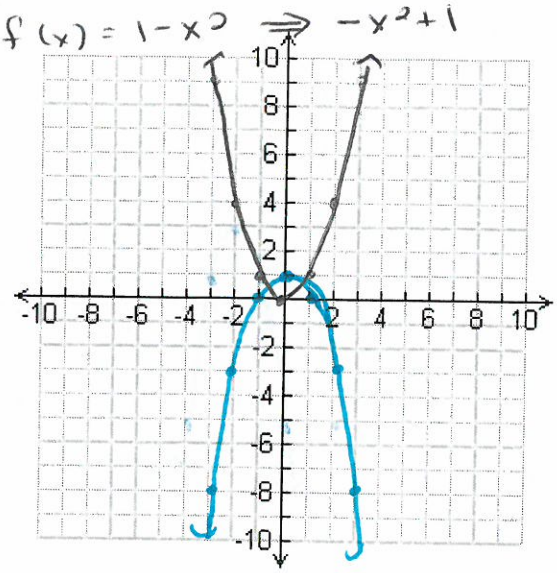
Parent: $f(x) = x^2$

Trans: left 7

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

R: $[0, \infty)$

(20) $f(x) = 1 - x^2 \Rightarrow -x^2 + 1$



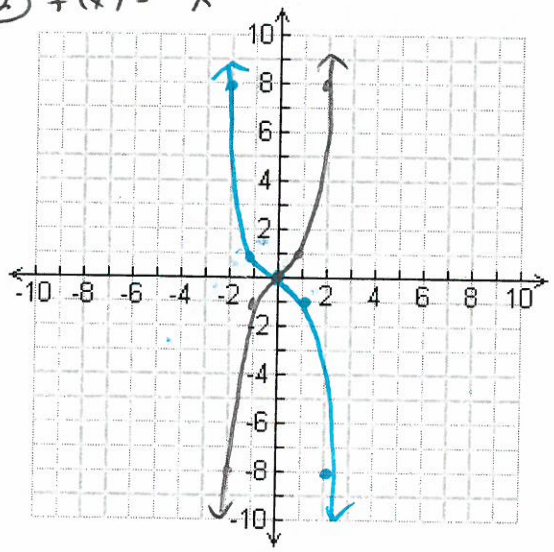
Parent: $f(x) = x^2$

Trans: reflection across x-axis, up 1

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

R: $(-\infty, 1]$

(22) $f(x) = -x^3$



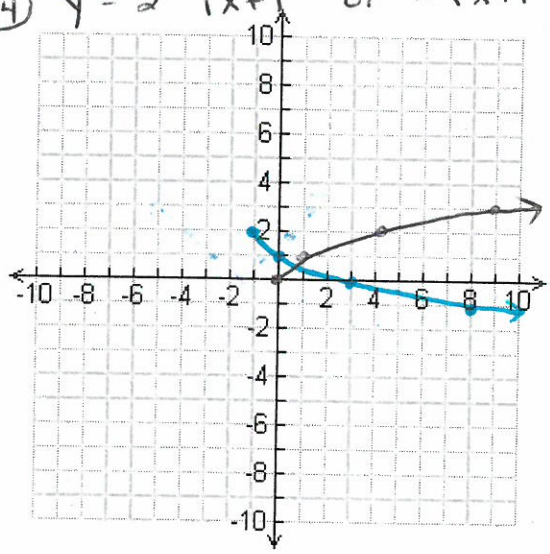
Parent: $f(x) = x^3$

Trans: reflection across x-axis

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

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

(24) $y = 2 - \sqrt{x+1}$ or $-\sqrt{x+1} + 2$



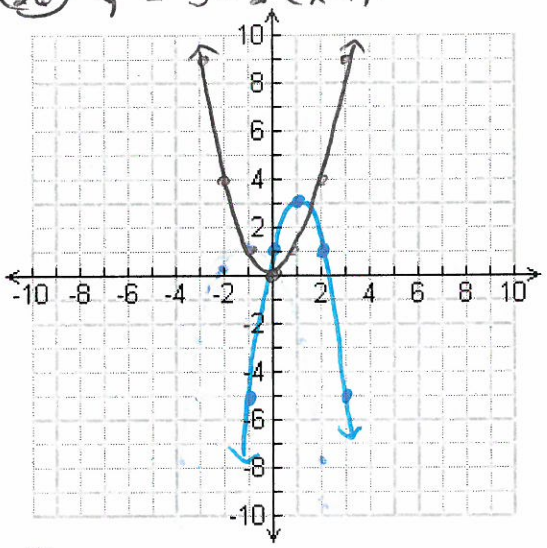
Parent: $y = \sqrt{x}$

Trans: reflection across x-axis, left one, up 2

D: $[-1, \infty)$

R $(-\infty, 2]$

(26) $y = 3 - 2(x-1)^2$



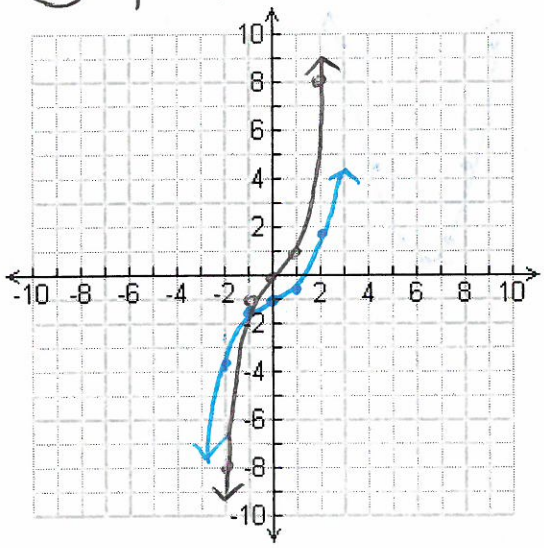
Parent $y = x^2$

Transformation: reflection across x-axis, vertical stretch of 2, right 1, up 3

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

R: $(-\infty, 3]$

(29) $y = \frac{1}{3}x^3 - 1$



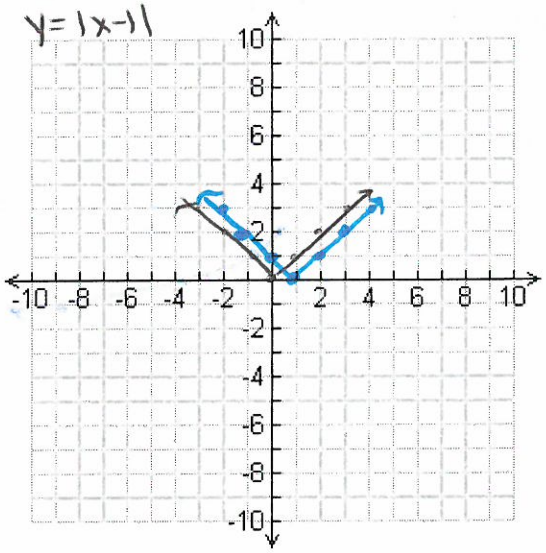
Parent: $y = x^3$

Trans: vertical shrink of $\frac{1}{3}$, down 1

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

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

(30) $y = |x-1|$



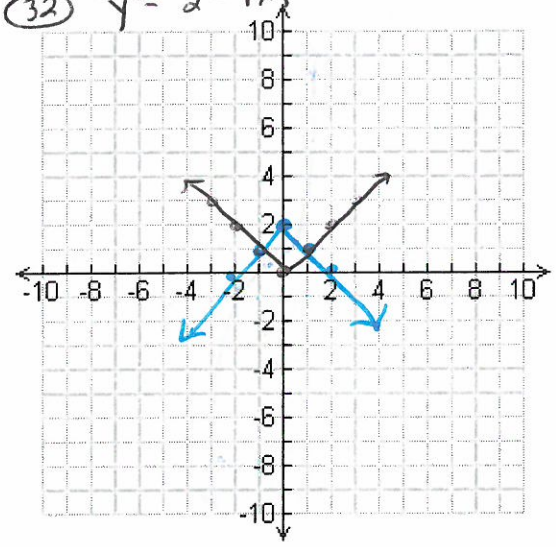
Parent: $y = |x|$

Transformation: right 1

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

R: $[0, \infty)$

(32) $y = 2 - |x|$



Parent $y = |x|$

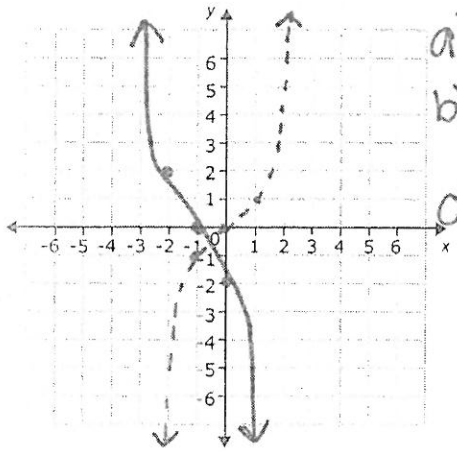
Trans: Reflection across x-axis, up 2

Transformation of Functions

Key

a) Identify the Parent function
b) Identify the transformation of the parent function (in words)
c) Identify the domain and range of the new function
d) Graph the parent function (using a dashed line) and the new function.

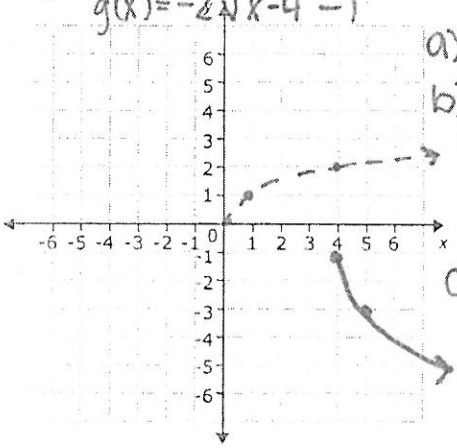
1. $f(x) = -2(x+1)^3$



a) x^3; cubic
b) Refl. x-axis, left 1, vertical stretch by 2
c) D: $(-\infty, \infty)$
R: $(-\infty, \infty)$

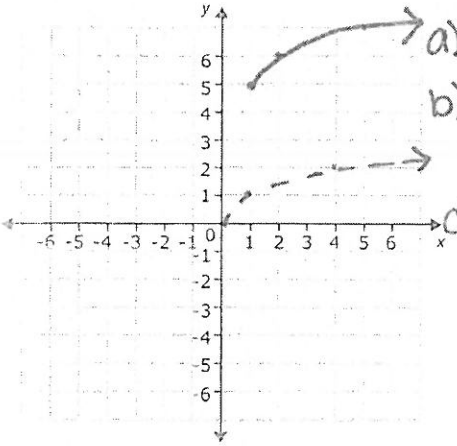
2. $g(x) = -1 - 2\sqrt{x-4}$

$g(x) = -2\sqrt{x-4} - 1$



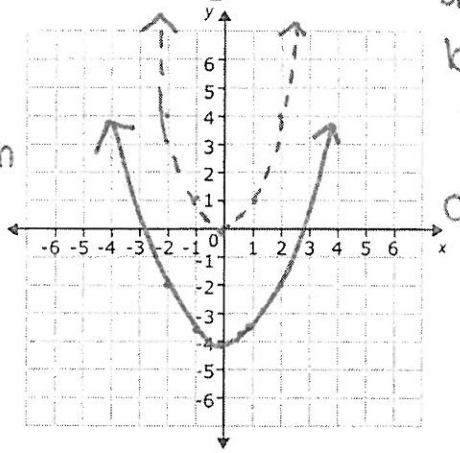
a) $\sqrt{x}$; square root
b) Refl. x-axis, vertical stretch by 2, Right 4, Down 1
c) D: $[4, \infty)$
R: $(-\infty, -1]$

3. $k(x) = \sqrt{x-1} + 5$



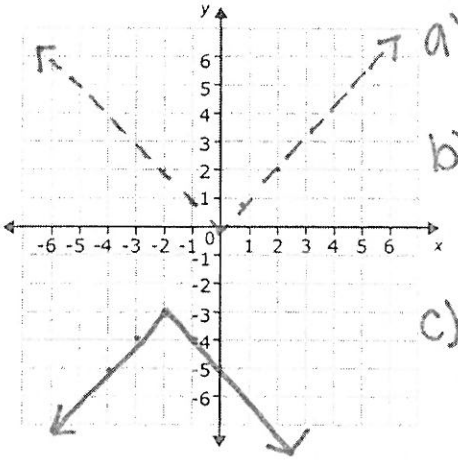
a) $\sqrt{x}$; square root
b) Right 1 Up 5
c) D: $[1, \infty)$
R: $[5, \infty)$

4. $j(x) = \frac{1}{2}x^2 - 4$



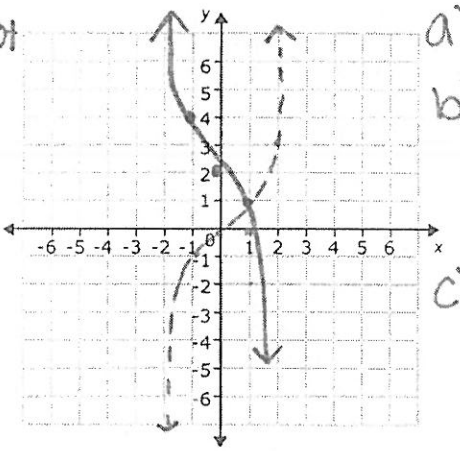
a) x^2; quadratic
b) vertical shrink by 2 Down 4
c) D: $(-\infty, \infty)$
R: $[-4, \infty)$

5. $f(x) = -|x+2| - 3$



a) $|x|$; absolute value
b) Refl. over x-axis, left 2 down 3
c) D: $(-\infty, \infty)$
R: $(-\infty, -3]$

6. $f(x) = 2(-x)^3 + 3$



a) x^3; cubic
b) vertical stretch by 2, Refl. over y-axis, up 2
c) D: $(-\infty, \infty)$
R: $(-\infty, \infty)$