Kuta Software - Infinite Precalculus

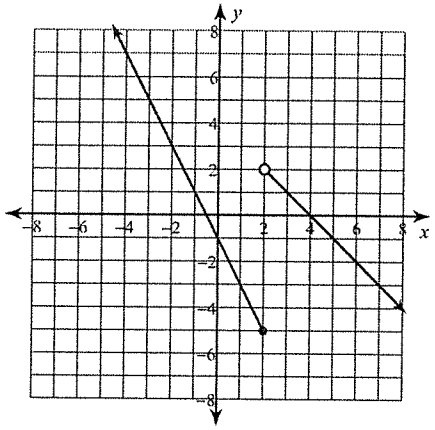
Name_____

# Piecewise Functions

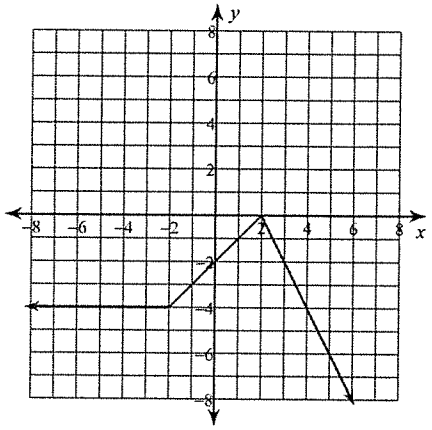
Date_____ Period____

**Sketch the graph of each function.**

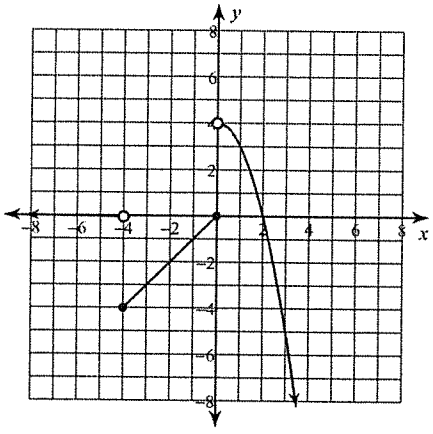
1) $f(x) = \begin{cases} -2x - 1, & x \le 2 \\ -x + 4, & x > 2 \end{cases}$



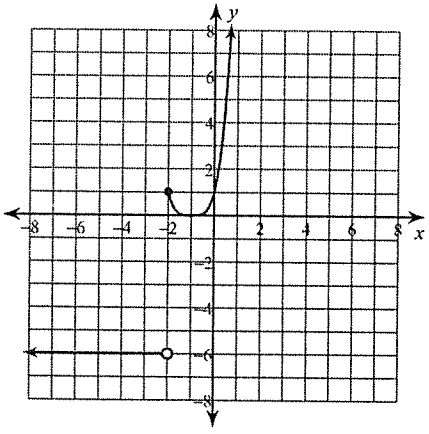
2) $f(x) = \begin{cases} -4, & x \le -2 \\ x - 2, & -2 < x < 2 \\ -2x + 4, & x \ge 2 \end{cases}$



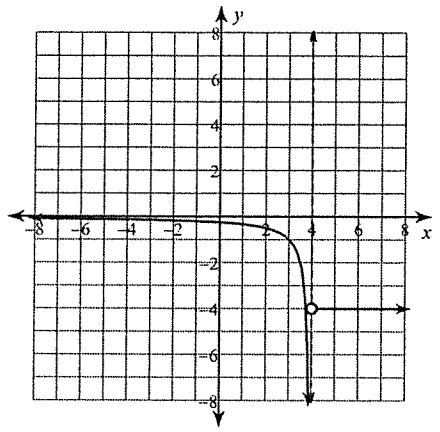
3) $f(x) = \begin{cases} -2^x, & x < -4 \\ -|x|, & -4 \le x \le 0 \\ 4 - x^2, & x > 0 \end{cases}$



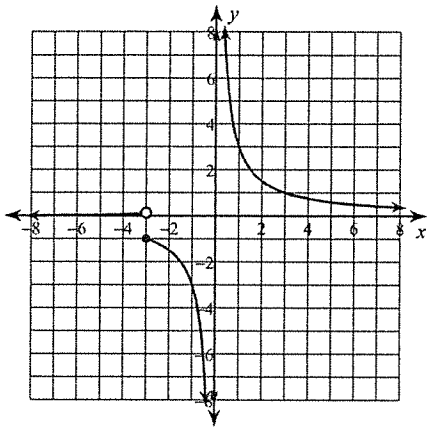
4) $g(x) = \begin{cases} -6, & x < -2 \\ (x+1)^4, & x \ge -2 \end{cases}$



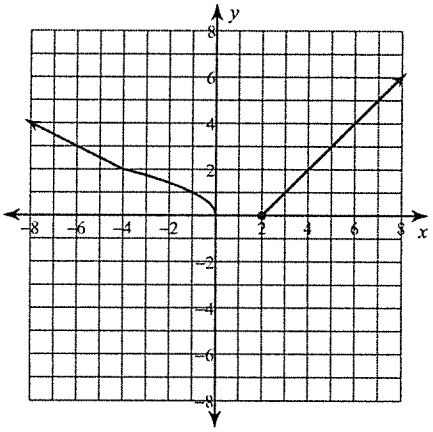
5) $f(x) = \begin{cases} \dfrac{1}{x-4}, & x \le 4 \\ -4, & x > 4 \end{cases}$



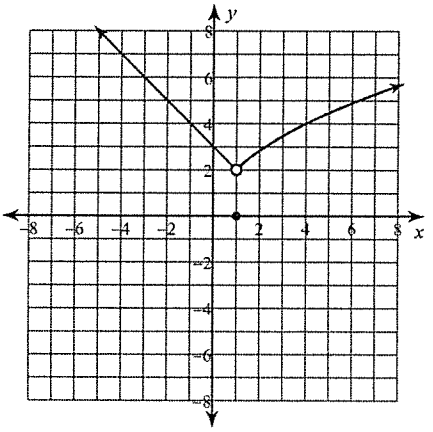
6) $h(x) = \begin{cases} 2^x, & x < -3 \\ \dfrac{3}{x}, & x \ge -3 \end{cases}$



7) $w(x) = \begin{cases} \dfrac{|x|}{2}, & x \le -4 \\ \sqrt{-x}, & -4 < x < 2 \\ |x-2|, & x \ge 2 \end{cases}$



8) $w(x) = \begin{cases} |x-3|, & x < 1 \\ (x-1)^4, & x = 1 \\ \sqrt{4x}, & x > 1 \end{cases}$

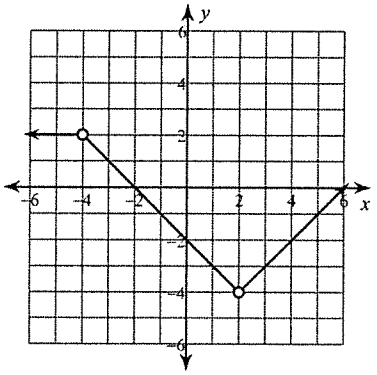


**Critical thinking questions:**

9) Write a rule for the sign function $s(n)$: $s(n)$ is $-1$ when $n$ is negative, $+1$ when $n$ is positive, and 0 otherwise.

$$s(n) = \begin{cases} -1, & n < 0 \\ 0, & n = 0 \\ 1, & n > 0 \end{cases}$$

10) Write a rule for the function shown.



$$f(x) = \begin{cases} 2, & x < -4 \\ -x - 2, & -4 < x < 2 \\ x - 6, & x > 2 \end{cases}$$

# Answers to Assignment (ID: 4)

1) $a^3 - 1$

2) $-27n^2 + 36n - 9$

3) $6a - 4$

4) $-12x - 3$

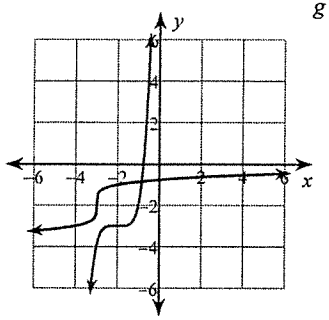
5) $-4x - 1$

6) No

7) No

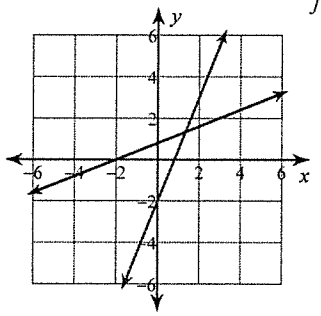
8)

$g^{-1}(x) = (x+2)^5 - 3$




9)

$f^{-1}(x) = -2 + \frac{5}{2}x$




10) $g^{-1}(n) = -n - 3$

11) $f^{-1}(x) = 2x + 6$

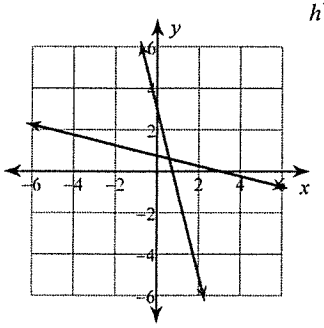
12) $h^{-1}(n) = \frac{4}{n-2} - 1$

13) $f^{-1}(x) = -\frac{3}{x+1} + 2$

# Answers to Assignment (ID: 3)

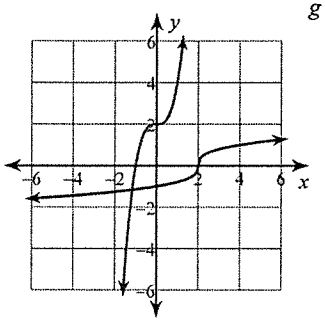
1) $2x - 3$
2) $6n - 6$
3) $n + 6$
4) $8x + 11$
5) $-n^3 + 3n^2 + 4$
6) No
7) No
8)

$h^{-1}(n) = -4n + 3$




9)

$g^{-1}(n) = 2n^3 + 2$




10) $f^{-1}(x) = \dfrac{4}{x-1} + 2$
11) $f^{-1}(n) = -2n^5 - 3$
12) $g^{-1}(x) = \dfrac{3}{x-2} + 1$
13) $f^{-1}(x) = \sqrt[3]{x} + 2$

# Answers to Assignment (ID: 2)

1) $-2t-5$

2) $-9x^3+6x^2+1$

3) $-64n^3+96n^2-48n+10$

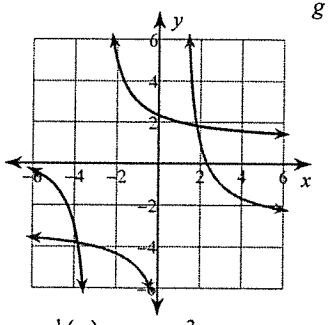
4) $12x^2-19$

5) $n-8$

6) No

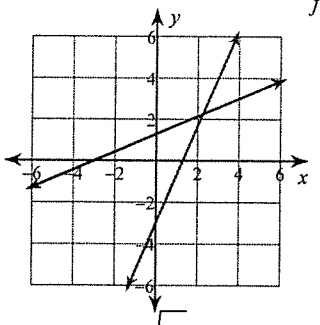
7) Yes

8)




$g^{-1}(x)=\frac{4}{x-1}-3$

9)




$f^{-1}(n)=-3+\frac{7}{3}n$

10) $g^{-1}(n)=-2n^3$

11) $h^{-1}(n)=\frac{2}{n-1}+2$

12) $g^{-1}(x)=\sqrt[3]{\frac{x}{2}}$

13) $f^{-1}(x)=\sqrt[3]{x}$

# Answers to Assignment (ID: 1)

1) $-27n^2 - 90n - 77$

2) $8n^3 - 24n^2 + 14n + 2$

3) $9x^2 - 15x + 6$

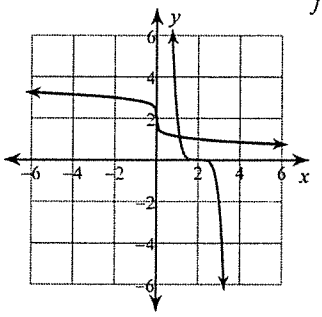
4) $-6n - 1$

5) $4a^3 - 4a + 5$

6) Yes

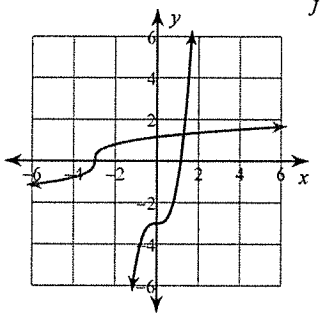
7) No

8)




$f^{-1}(x) = -2(x-2)^5$

9)




$f^{-1}(n) = \sqrt[3]{\frac{n+3}{2}}$

10) $h^{-1}(x) = 2 - \frac{4}{3}x$

11) $g^{-1}(x) = \sqrt[3]{\frac{-x-1}{2}}$

12) $f^{-1}(n) = -\frac{3}{n-1} - 2$

13) $f^{-1}(n) = \frac{1}{3}n + \frac{2}{3}$