

Reciprocal Identities

$$\sin \theta = \frac{1}{\csc \theta} \quad \cos \theta = \frac{1}{\sec \theta} \quad \tan \theta = \frac{1}{\cot \theta}$$

$$\csc \theta = \frac{1}{\sin \theta} \quad \sec \theta = \frac{1}{\cos \theta} \quad \cot \theta = \frac{1}{\tan \theta}$$

Tangent & Cotangent Identities

$$\tan \theta = \frac{\sin \theta}{\cos \theta} \quad \cot \theta = \frac{\cos \theta}{\sin \theta}$$

Pythagorean Identities

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$1 + \cot^2 \theta = \csc^2 \theta$$

$$\tan^2 \theta + 1 = \sec^2 \theta$$

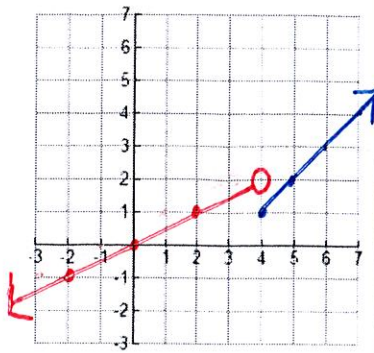
Double-Angle Formula

$$\sin 2\theta = 2 \sin \theta \cos \theta$$

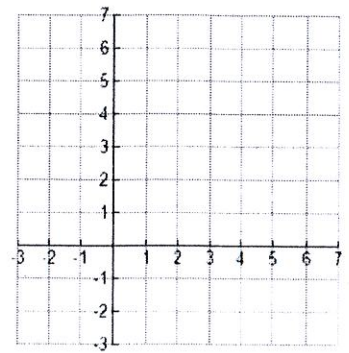
Piecewise Function
Day 1

Name _____
Date _____ Pd _____

$$1. f(x) = \begin{cases} \frac{1}{2}x & x < 4 \\ x-3 & x \geq 4 \end{cases}$$



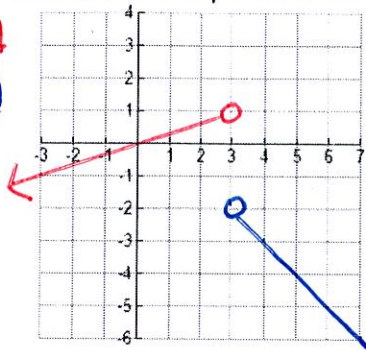
$$2. f(x) = \begin{cases} \frac{1}{2}x & x < 4 \\ x-2 & x \geq 4 \end{cases}$$



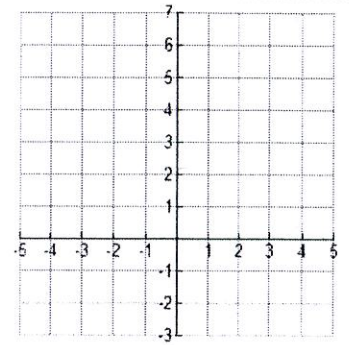
What is the domain of $f(x)$? $(-\infty, \infty)$

What is the domain of $f(x)$?

$$3. f(x) = \begin{cases} \frac{1}{3}x & x < 3 \\ 1-x & x > 3 \end{cases}$$



$$3. f(x) = \begin{cases} -x & x < -1 \\ -2 & -1 \leq x < 2 \\ 2x & x \geq 2 \end{cases}$$



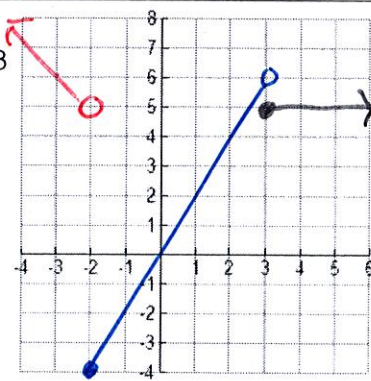
$$f(x) = \begin{cases} \frac{1}{3}x & x < 3 \\ 1-x & x > 3 \\ -1 & x = 3 \end{cases}$$

What is the domain of $f(x)$? $(-\infty, 3) \cup (3, \infty)$

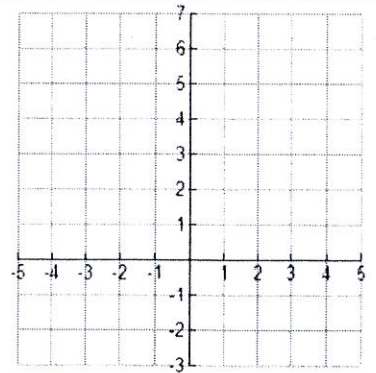
What is the domain of $f(x)$?

What would make the domain all Reals?
 $(3, \text{any } y\text{-value}) = \text{coordinate.}$

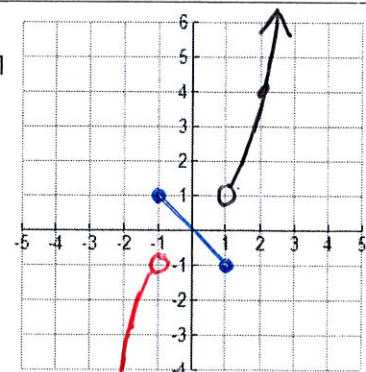
$$5. f(x) = \begin{cases} 3-x & x < -2 \\ 2x & -2 \leq x < 3 \\ 5 & x \geq 3 \end{cases}$$



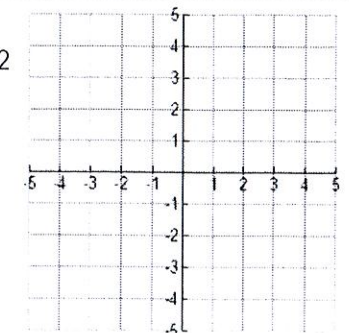
$$6. f(x) = \begin{cases} x^2 & x < -1 \\ 4 & -1 \leq x < 1 \\ x^2 & x \geq 1 \end{cases}$$



$$7. f(x) = \begin{cases} -x^2 & x < -1 \\ -x & -1 \leq x \leq 1 \\ x^2 & x > 1 \end{cases}$$



$$8. f(x) = \begin{cases} 5 & x < -2 \\ -x^2 & -2 \leq x < 2 \\ x-2 & x \geq 2 \end{cases}$$



Make tables
if you need to

$x < -1$	$y = -x^2$	$-1 \leq x \leq 1$	$-x$
0	-1	-1	1
-1	-1	-1	1
-2	-4	-1	1
-3	-9	-1	1

closed both ends

$x > 1$	$y = x^2$
1	1
2	4
3	9

open circle

open circle