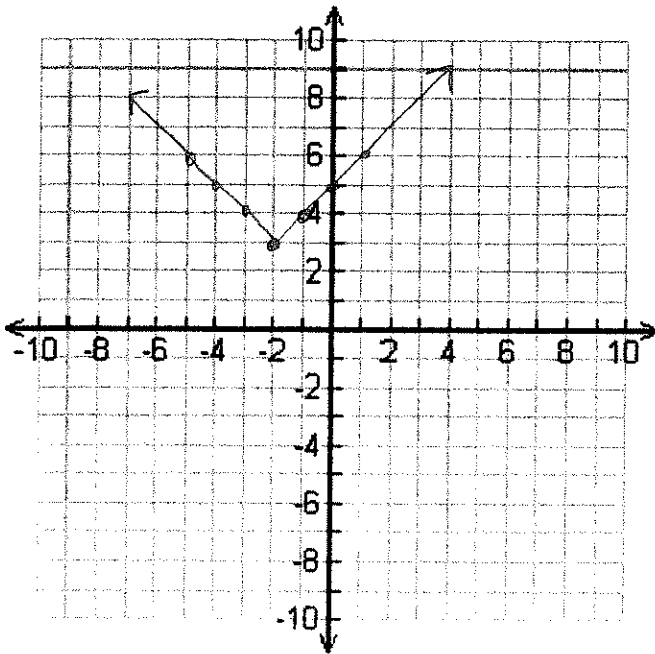


1. Graph the following function and give the piecewise function

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

Piecewise Function:

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



2. Graph each function on the same graph below:

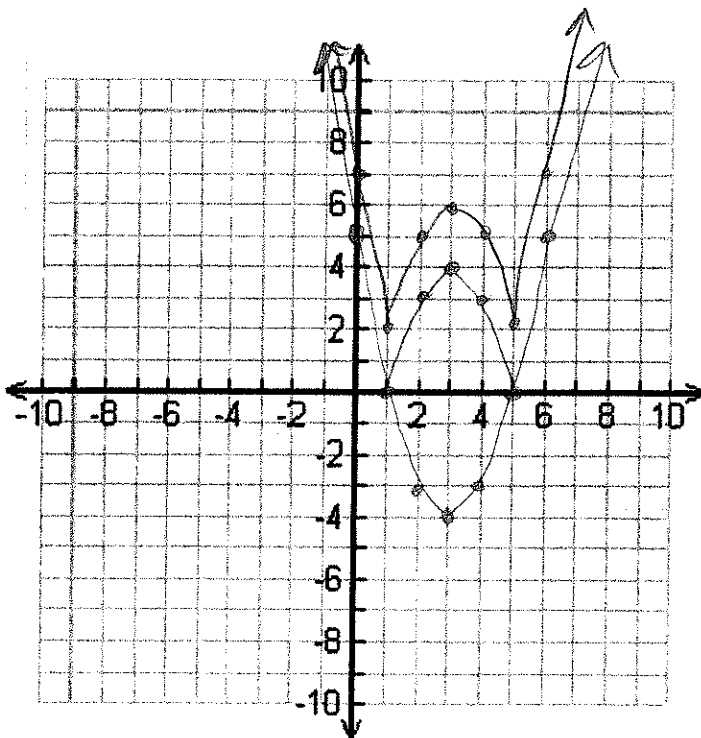
a. $f(x) = (x-3)^2 - 4$

b. $g(x) = |(x-3)^2 - 4|$

c. $h(x) = |(x-3)^2 - 4| + 2$

d. Write the piecewise function for h(x)

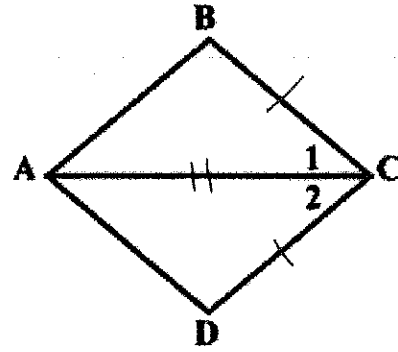
$$f(x) = \begin{cases} ((x-3)^2 - 4) + 2 & x \leq 1 \\ -((x-3)^2 - 4) + 2 & 1 < x < 5 \\ ((x-3)^2 - 4) + 2 & x \geq 5 \end{cases}$$



3. Fill in the proof below:

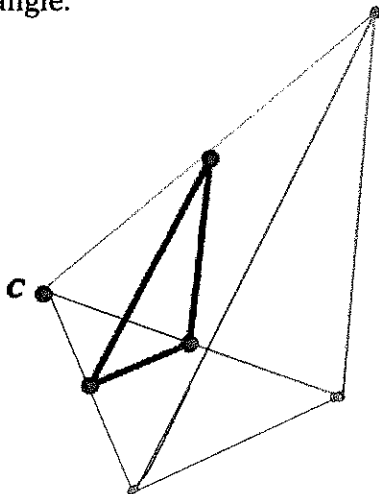
Given: $CB \cong CD$, $\angle 1 \cong \angle 2$

Prove: $AB \cong AD$

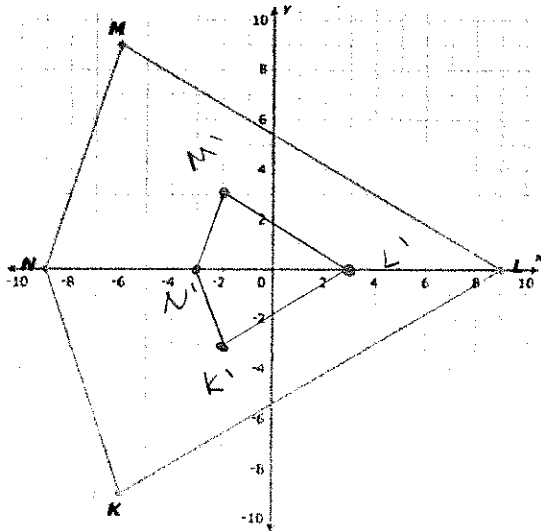


Statement	Reasoning
$CB \cong CD$	Given
$\angle 1 \cong \angle 2$	Given
$AC \cong AC$	Reflexive
$\triangle ABC \cong \triangle ADC$	SAS
$AB \cong AD$	CPCTC

4. C is the center of dilation. Create an image with side lengths 2 times the size of the given triangle.



5. Graph the image of kite KLMN after a dilation with a scale factor of 1/3, centered at the origin.

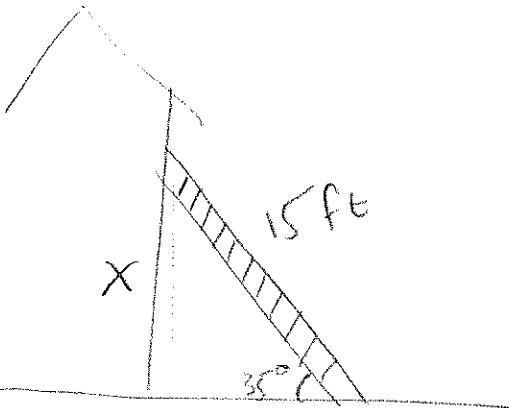


6. Pete has a 15-foot ladder. The safety instructions recommend he should have the base of the ladder create a 35° angle with the floor. How high will the ladder reach on the wall? Round to the nearest tenths and draw a diagram for the problem.

$$\sin(35) = \frac{x}{15}$$

$$15 \cdot \sin(35) = x$$

$$8.6 \text{ ft} = x$$



9. The area of the biggest cookie in the world is 196π ft. What is the length of its radius?

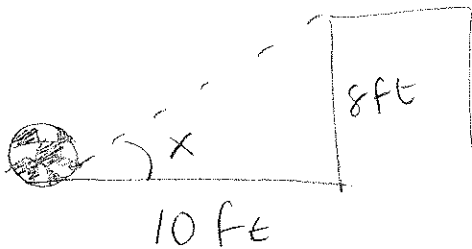
$$C = 2\pi r$$

$$\frac{196\pi}{\pi} = \frac{2\pi r}{\pi}$$

$$\frac{196}{2} = \frac{2r}{2}$$

$$98 \text{ ft} = r$$

7. A soccer ball is placed 10 feet away from the goal, which is 8 feet high. You kick the ball, and it hits the crossbar along the top of the goal. What is the angle of elevation of your kick? Round to the nearest tenths and draw a diagram for the problem.

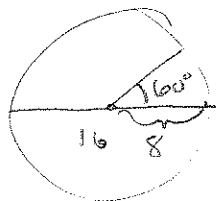


$$\tan(x) = \frac{8}{10}$$

$$x = \tan^{-1}\left(\frac{8}{10}\right)$$

$$x = 38.7^\circ$$

8. You order a pizza that has a diameter of 16 inches. Each slice is cut at a 60° angle. What is the area of one slice of pizza? What is the length of the crust of that one slice?



$$A_{\text{sector}} = \frac{\text{angle}}{360} \cdot \pi r^2$$

$$A_{\text{sector}} = \frac{60}{360} \cdot \pi (8)^2$$

$$= \frac{60}{360} \cdot 64\pi$$

$$L_{\text{arc}} = \frac{\text{angle}}{360} \cdot 2\pi r$$

$$L_{\text{arc}} = \frac{60}{360} \cdot 2\pi \cdot 8$$

$$L_{\text{arc}} = \frac{60}{360} \cdot 16\pi$$

Sector Area:

Exact: $10.666\pi \text{ in}^2$

Approximate: 33.51 in^2

Arc Length:

Exact: $2.666\pi \text{ in}$

Approximate: 8.38 in