

# 2 Practice Test WITH CalcChat®

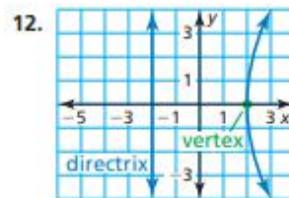
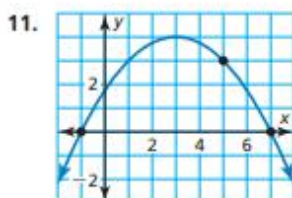
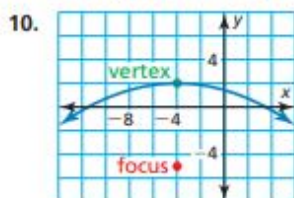


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Describe the transformation of  $f(x) = x^2$  represented by  $g$ . Then graph each function.

- $g(x) = x^2 - 6$
- $g(x) = (x + 1)^2$
- $g(x) = \frac{1}{4}x^2$
- $g(x) = (3x)^2$
- $g(x) = -x^2 + 3$
- $g(x) = (2x + 1)^2 - 4$
- Identify the focus, directrix, and axis of symmetry of  $x = 2y^2$ . Graph the equation.
- Graph  $f(x) = 8x^2 - 4x + 3$ . Label the vertex and axis of symmetry. Find when the function is increasing and decreasing.
- A parabola has axis of symmetry  $y = 3$  and passes through the point  $(2, 1)$ . Find another point that lies on the parabola. Explain your reasoning.

Write an equation of the parabola.

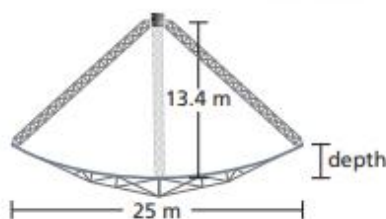


- A surfboard shop sells 40 surfboards per month when it charges \$500 per surfboard. Each time the shop decreases the price by \$10, it sells 1 additional surfboard per month. How much should the shop charge per surfboard to maximize monthly revenue? What is the maximum monthly revenue? Explain.
- Explain why a quadratic function models the data. Then use a linear system to find the model.

$x$	2	4	6	8	10
$f(x)$	0	-13	-34	-63	-100



- The SG4 Big Dish is a machine with a parabolic cross section used to collect solar energy. The Sun's rays are reflected from the mirrors toward the focus of the parabola, where the heat produces steam. The steam can then be used to produce electricity.
  - Write an equation that represents the cross section of the dish with its vertex at  $(0, 0)$ .
  - What is the depth of the SG4 Big Dish? Justify your answer.



- The table shows the speeds  $s$  (in feet per second) of sound in water at various temperatures  $t$  (in degrees Fahrenheit). Write a function that models the data. Use the model to approximate the speed of sound when the water temperature is  $100^\circ\text{F}$ .

Temperature ( $^\circ\text{F}$ ), $t$	32	50	90	120	180	212
Speed (ft/sec), $s$	4603	4748	4960	5049	5095	5062