

Assignment

Date _____ Period _____

- 1) The llama rancher needs to fence two small adjacent rectangular pens as shown below. He has 100 feet of fencing and wants the pens to cover 350 square feet. Find the possible dimensions for measurements a and b in the diagram.

- 2) The Adams' family home sits on a corner lot. Children cut across the corner from point B to point A (the front gate opening) rather than walking around the fence from B to C to A . Angle BCA is a right angle, $AC = BC + 21$ feet, and $AB = BC + 24$ feet. How many feet does a child save by cutting across the yard instead of walking around the corner?

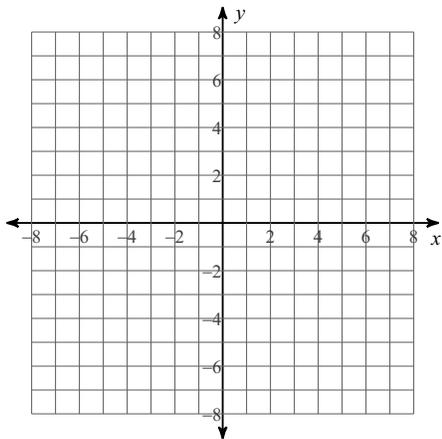
- 3) A store's revenue from selling skateboards is determined by multiplying the number of skateboards by the cost per skateboard. The revenue, r , from selling x skateboards (where x is less than or equal to 50) is $r = x(50 - 0.2x)$. How many skateboards need to be sold to have a revenue of \$480.

- 4) The braking distance, in feet, of a car traveling at v miles per hour is given by the equation: $d = \frac{v^2}{20} + 2.2v$, where d is the braking distance and v is the velocity (speed) of the car (plus an allowance of 1.5 seconds for driver reaction time). If your car is traveling at 65 miles per hour, what distance is required to stop the car?

- 5) In preparing astronauts for space travel, and for conducting other experiments, NASA uses a C-9 jet to create short periods of weightlessness or near zero gravity, called microgravity. The jet sharply rises and falls in altitude following the arc of a parabola to create the weightlessness phenomena. Only the parabolic portion of the jet's flight will create this microgravity effect. During one such flight, the jet's parabolic ascent began at 30,000 feet and was modeled by the equation $h = -16t^2 + 350t + 30000$ where $h =$ altitude in feet and $t =$ time in seconds.
- How long did the microgravity effect last?
 - What was the maximum altitude reached during this parabolic portion of the flight?

For each function, identify the holes and horizontal or vertical asymptotes. Then sketch the graph.

6) $f(x) = \frac{x^2 + 6x + 8}{-2x^2 - 2x + 24}$



7) $f(x) = \frac{2x - 4}{x^3 - 5x^2 + 6x}$

