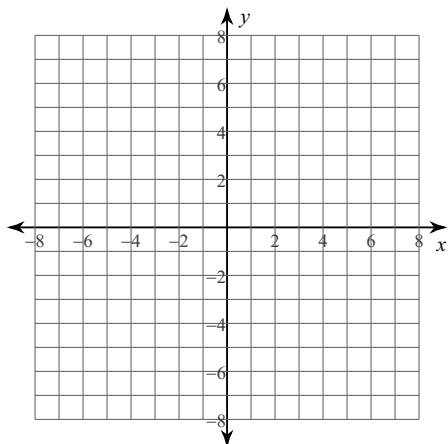


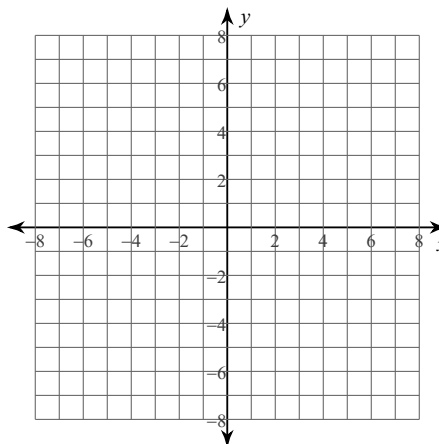
8.2 Worksheet

Identify the vertical asymptotes, horizontal asymptote, domain, and range of each. Then sketch the graph.

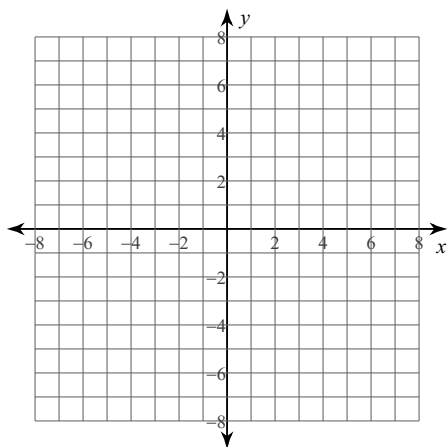
1) $f(x) = \frac{3}{x} - 1$



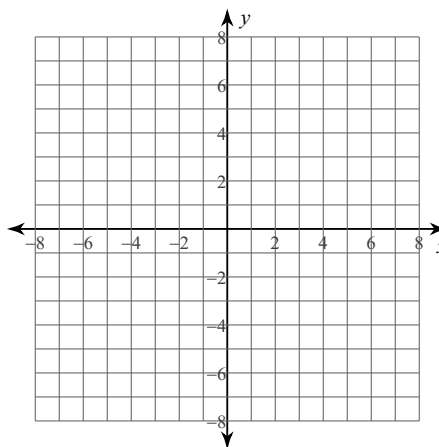
2) $f(x) = \frac{4}{x-1} + 2$



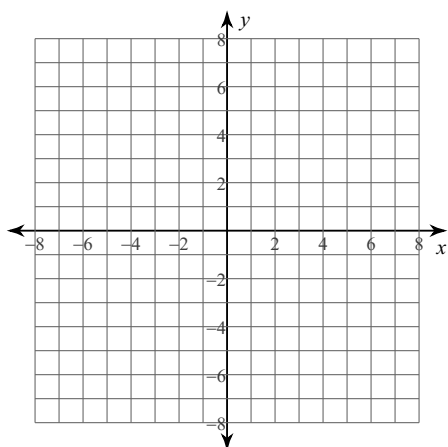
3) $f(x) = -\frac{1}{x+3} + 1$



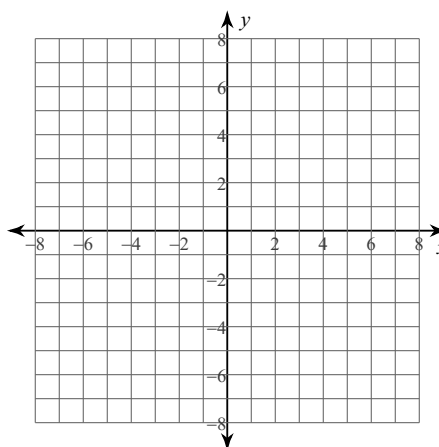
4) $f(x) = -\frac{4}{x} - 2$



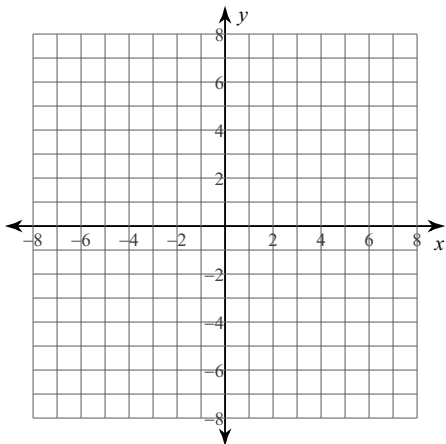
5) $f(x) = -\frac{4}{x-1} - 2$



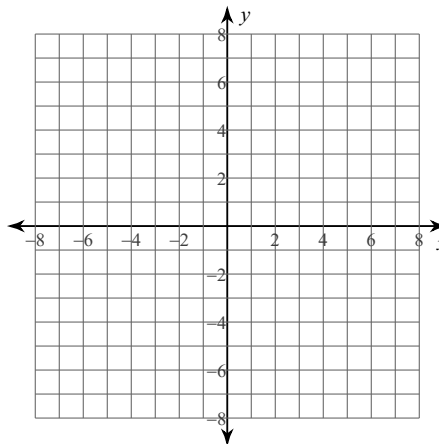
6) $f(x) = \frac{2}{x+2} - 3$



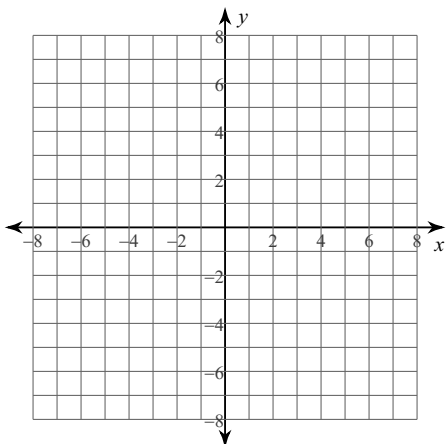
$$7) f(x) = \frac{3}{x+1} - 2$$



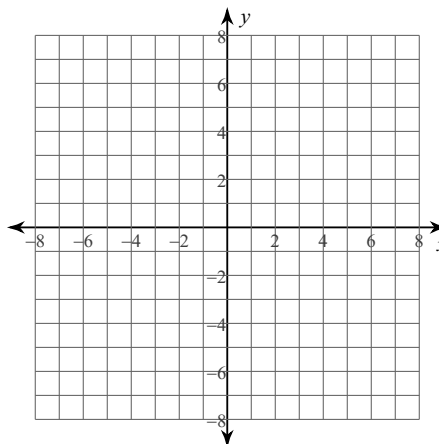
$$8) f(x) = \frac{4}{x} - 2$$



$$9) f(x) = \frac{3}{x+1}$$



$$10) f(x) = \frac{2}{x-1} + 1$$



11) The time t (in seconds) it takes the sound to travel 1 kilometer can be modeled by $t = \frac{1000}{0.6T + 331}$

where T is the air temperature (in degrees Celsius).

a. How long does it take for sound to travel 5 kilometers when the air temperature is 25°C ?

b. Suppose you are 1 kilometer from a lightning strike, and it takes 3 seconds to hear the thunder. What was the air temperature?

12) A business is studying the cost to remove a pollutant from the ground at its site. The function

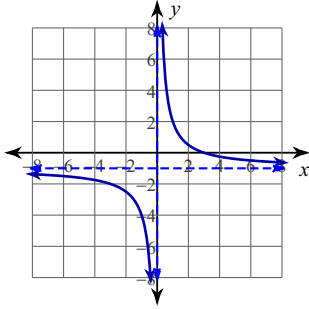
$y = \frac{15x}{1.1 - x}$ models the estimated cost y (in thousands of dollars) to remove x percent (expressed as a decimal) of the pollutant.

a. Describe a reasonable domain and range of the function.

b. How much does it cost to remove 20% of the pollutant? 40% of the pollutant? 80% of pollutant? Does doubling the percent of the pollutant remove double the cost? Explain.

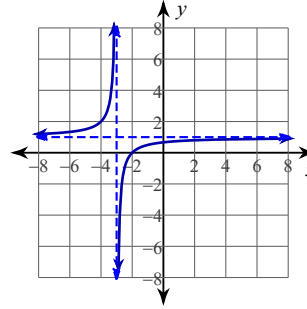
Answers to 8.2 Worksheet

1)



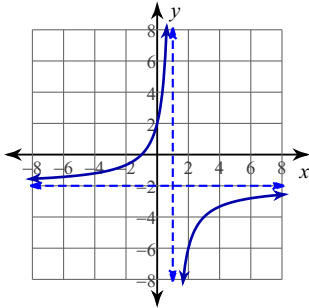
Vertical Asym.: $x = 0$
 Horz. Asym.: $y = -1$
 Domain:
 All reals except 0
 Range:
 All reals except -1

3)



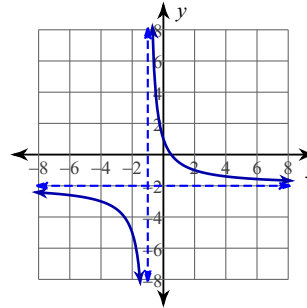
Vertical Asym.: $x = -3$
 Horz. Asym.: $y = 1$
 Domain:
 All reals except -3
 Range:
 All reals except 1

5)



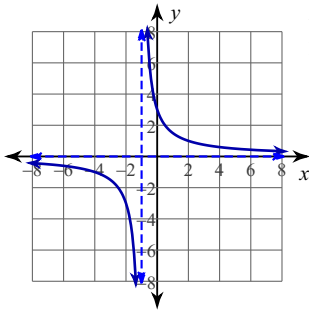
Vertical Asym.: $x = 1$
 Horz. Asym.: $y = -2$
 Domain:
 All reals except 1
 Range:
 All reals except -2

7)



Vertical Asym.: $x = -1$
 Horz. Asym.: $y = -2$
 Domain:
 All reals except -1
 Range:
 All reals except -2

9)



Vertical Asym.: $x = -1$
 Horz. Asym.: $y = 0$
 Domain:
 All reals except -1
 Range:
 All reals except 0

11) a. about 14.5 sec.

b. about 3.9°C