9.1 Exploring Rational Functions Using Transformations (Part 2)

Try:

The rational function $y = \frac{a}{x-5} + k$ passes through points (3, 5) and (7, 2).
Determine the value of *a* and *k*.

Example 4: Using a Graphing Calculator

a.) Graph $f(x) = \frac{1}{x^2}$,

Fill in the table:

Characteristic	Equation: $f(x) = \frac{1}{x^2}$
Non-Permissible value	
Behaviour Near non-permissible value	
End Behaviour	
Domain	
Range	
Equation of Vertical Asymptote	
Equation of Horizontal Asymptote	

b.) Graph $g(x) = \frac{1}{x^2-6x+9}$,

Fill in the table:

Characteristic	Equation: $g(x) = \frac{1}{x^2-6x+9}$
Non-Permissible value	
Behaviour Near non-permissible value	
End Behaviour	
Domain	
Range	
Equation of Vertical Asymptote	
Equation of Horizontal Asymptote	

c.) Graph $h(x) = 4 - \frac{1}{(x-2)^2}$,

Fill in the table:

Characteristic	Equation: $h(x) = 4 - \frac{1}{(x-2)^2}$
Non-Permissible value	
Behaviour Near non-permissible value	
End Behaviour	
Domain	
Range	
Equation of Vertical Asymptote	
Equation of Horizontal Asymptote	

Example 5: Word Problems

Two different companies provide internet. The first company charges $50 setup fee and $2.50 per day; the second company charges $80 for setup and $2.10 per day.
a.) Represent the **average** cost per day for each company as a function of the number of days.

b.) Graph the two functions.