

CHAPTER 4 REVIEW

1.

Find the restricted values of "x" for the rational expressions. If there are any vertical, and/or horizontal, or oblique asymptotes find them, if not state "none".

$$\frac{x^2 + x + 1}{5x^2 - 3x}$$

Vertical (x)	Horizontal (y)	Oblique (y)

2.

Use polynomial long division to rewrite the following fraction in the form $q(x) + \frac{r(x)}{d(x)}$, where $d(x)$ is the denominator of the original fraction, $q(x)$ is the quotient, and $r(x)$ is the remainder.

$$\frac{x^3 + 4x^2 - 21x - 13}{x - 4}$$

3.

Use synthetic division or long division to determine if the given value for k is a zero of this polynomial. If not, determine $p(k)$. Is k a zero of this polynomial?

$$p(x) = 3x^4 - 19x^3 - 6x^2 + 142x - 60; k = 5$$

4.

Construct a polynomial function with the stated properties. Reduce all fractions to lowest terms. Second-degree, with zeros of -4 and 3, and goes to $-\infty$ as $x \rightarrow -\infty$.

5.

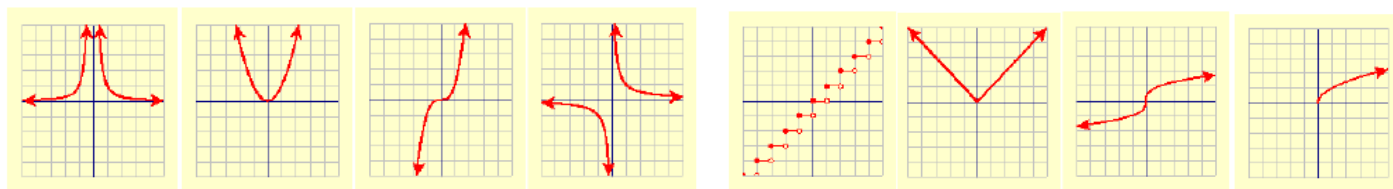
Consider the following function.

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

Step 1 Identify the formula for the more basic function that has been shifted, reflected, stretched, or compressed to obtain $g(x)$.

$$\frac{1}{x^2} \quad \sqrt{x} \quad x^2 \quad [x] \quad \frac{1}{x} \quad |x| \quad x^3 \quad \sqrt[3]{x}$$

Step 2. Indicate the shape of the function that was found in step 1.



Step 3. Graph this function by indicating how the basic function found in step 1 has been shifted, reflected, stretched, or compressed

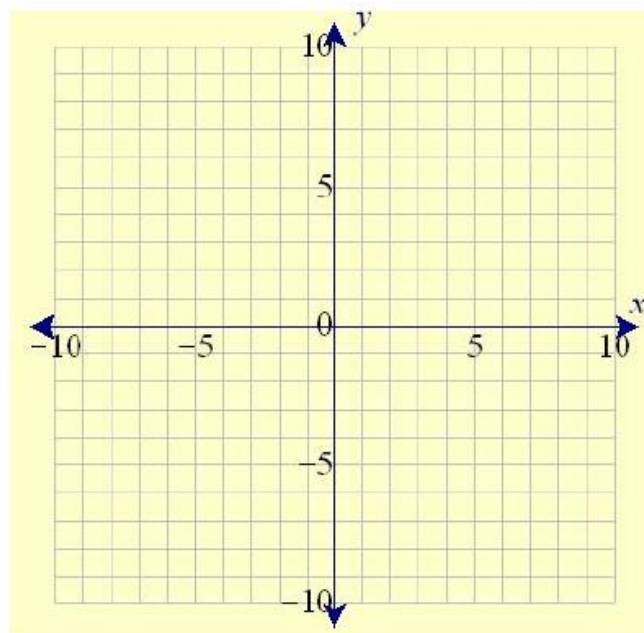
Horizontal Shift A) Left B) Right C) None

Stretch/Compress A) Stretch B) Compress C) None

x-Axis Reflection A) Yes B) No

y-Axis Reflection A) Yes B) No

Vertical Shift A) Up B) Down C) None



Step 4. Determine the domain and range of this function. Write your answer in interval notation or symbol notation.

6.

Given the following rational function:

$$f(x) = \frac{-14x^2 + 27x - 9}{7x - 3}$$

Step 1. Find equations for the vertical asymptotes, if any, for the rational function.**Step 2.** Find equations for the horizontal or oblique asymptotes, if any, for the rational function.**Step 3.** Find the domain of the rational function.

7.

Match the polynomial function $z(x) = (x - 1)(x + 2)(3 - x)$, by determining the x -intercepts, the y -intercept, and the behavior as $x \rightarrow \pm\infty$ from one of the graphs labeled below.

Identify:

Basic Function of end behavior

$\frac{1}{x^2}$

\sqrt{x}

x^2

$[x]$

$\frac{1}{x}$

$|x|$

x^3

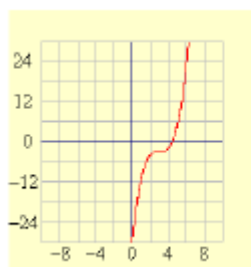
$\sqrt[3]{x}$

 x -intercepts = y -intercept =

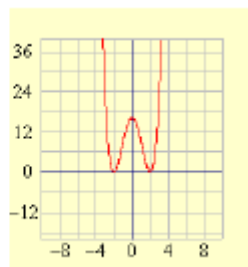
degree of function =

total turning points =

Select the graph below which corresponds to the function.



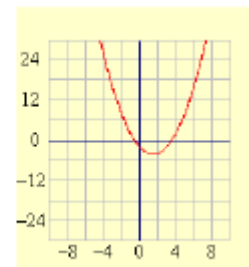
(a)



(b)



(c)



(d)