

Practice Quiz

Use polynomial long division to rewrite the following rational functions

1.
$$\frac{5x^3 - x^2 + 6}{x - 4}$$

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

3.
$$\frac{2x^4 - 5x^3 + 10x + 4}{x^2 - 3}$$

4.
$$\frac{5x^3 - 36}{x^2 - 12}$$

5.
$$\frac{7x^4 + x^2 + 12}{x^2 + 2}$$

6.
$$\frac{4x^3 + 2x^2 - x + 5}{x^2 + 3}$$

State the equations of all the vertical asymptotes and slant asymptotes for the following rational functions.

$$\frac{2x^2 + x + 3}{x + 6}$$

7.

$$\frac{x^3 + 3x^2 + x - 12}{x^2 - 9}$$

8.

$$\frac{5x^2 + 3}{x - 8}$$

9.

$$\frac{x^2 - 5x + 8}{x - 3}$$

10.

$$\frac{x^2 - 3x - 4}{x - 2}$$

11.

$$\frac{5x^4 - 2x}{x^2 + 1}$$

12.

Answers:

1. $5x^2 + 19x + \frac{310}{x-4} + 76\frac{4x^3 + 6}{x-4}$

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

3. $2x^2 + \frac{22 - 5x}{x^2 - 3} - 5x + 6$

4. $\frac{12(5x - 3)}{x^2 - 12} + 5x$

5. $7x^2 + \frac{38}{x^2 + 2} - 13$

6. $-\frac{13x + 1}{x^2 + 3} + 4x + 2$

7a. $x = -6$ 7b. $2x - 11$

8a. $x = 3$ 8b. $x + 3$

9a. $x = 8$	9b. $5x + 40$
10a. $x = 3$	10b. $x - 2$
11a. $x = 2$	11b. $x - 1$
12a. Undefined	12b. Undefined