

- a) State the degree of the polynomial in the numerator of the function.
- b) State the degree of the polynomial in the denominator of the function.
- c) State the Vertical Asymptote(s) of the function (if there are any).
- d) State the Horizontal Asymptote of the function (if there is one).

1) $y = \frac{2x-3}{x+5}$

7) $y = \frac{4x}{2x^2-5}$

13) $y = \frac{3x^2-5x-2}{x+4}$

2) $y = \frac{3+2x-x^2}{4x^2+6}$

8) $y = \frac{7}{x}$

14) $y = \frac{4x^2+8x}{2x+3}$

3) $y = \frac{5x-1}{x^2+5x+6}$

9) $y = \frac{7x+2}{x}$

15) $y = \frac{x^3+5x+3}{x^2+1}$

4) $y = \frac{(3x-1)(x+2)}{(2x+3)(3x-5)}$

10) $y = \frac{7x^2}{x-1}$

5) $y = \frac{1}{3x-1}$

11) $y = \frac{(x-3)(x-5)}{(x+1)^3}$

6) $y = \frac{5}{(x-3)^2}$

12) $y = \frac{(2x+1)^3}{(x-1)^3}$

Answers:

- 1 a) 1 b) 1 c) $x = -5$ d) $y = 2$
- 2 a) 2 b) 2 c) no V.A. d) $y = -1/4$
- 3 a) 1 b) 2 c) $x = -2, x = -3$ d) $y = 0$
- 4 a) 2 b) 2 c) $x = -3/2, x = 5/3$ d) $y = 1/2$
- 5 a) 0 b) 1 c) $x = 1/3$ d) $y = 0$
- 6 a) 0 b) 2 c) $x = 3$ d) $y = 0$
- 7 a) 1 b) 2 c) $x = \frac{\sqrt{10}}{2}, x = -\frac{\sqrt{10}}{2}$ d) $y = 0$
- 8 a) 0 b) 1 c) $x = 0$ d) $y = 0$
- 9 a) 1 b) 1 c) $x = 0$ d) $y = 7$
- 10 a) 2 b) 1 c) $x = 1$ d) there is no H.A. (there is a Slant Asymptote, what is it?)
- 11 a) 2 b) 3 c) $x = -1$ d) $y = 0$
- 12 a) 3 b) 3 c) $x = 1$ d) $y = 8$
- 13 a) 2 b) 1 c) $x = -4$ d) there is no H.A. (the S.A. is $y = 3x - 17$)
- 14 a) 2 b) 1 c) $x = -3/2$ d) there is no H.A. (the S.A. is $y = 2x + 1$)
- 15 a) 3 b) 2 c) no V.A. d) no H.A. (the S.A. is $y = x$)