# Answer Key · Lesson 5.3: Rational Functions and Asymptotes

School Launch · Algebra II · Unit 5 · Worksheet A · for the parent

Key

**1.** VA $x = 6$; HA $y = 0$

Find the vertical and horizontal asymptotes of $f(x) = \frac{4}{x-6}$.

**2.** VA $x = -1$; HA $y = 0$

Find the vertical and horizontal asymptotes of $f(x) = \frac{3}{x+1}$.

**3.** VA $x = 6$; HA $y = 0$

Find the vertical and horizontal asymptotes of $f(x) = \frac{1}{x-6}$.

**4.** VA $x = -1$; HA $y = 1$

1. Denominator $= 0$: $x + 1 = 0 \Rightarrow x = -1$
2. Equal degrees: $y = \dfrac{1}{1} = 1$

Find the vertical and horizontal asymptotes of $f(x) = \frac{x-5}{x+1}$.

**5.** VA $x = 1$; HA $y = 4$

1. Denominator $= 0$: $x - 1 = 0 \Rightarrow x = 1$
2. Equal degrees: $y = \dfrac{4}{1} = 4$

Find the vertical and horizontal asymptotes of $f(x) = \frac{4x-3}{x-1}$.

**6.** VA $x = -2$; HA $y = 4$

1. Denominator $= 0$: $x + 2 = 0 \Rightarrow x = -2$
2. Equal degrees: $y = \dfrac{4}{1} = 4$

Find the vertical and horizontal asymptotes of $f(x) = \frac{4x-4}{x+2}$.

**7.** VA $x = -4$; HA $y = 4$

1. Denominator $= 0$: $x + 4 = 0 \Rightarrow x = -4$
2. Equal degrees: $y = \dfrac{4}{1} = 4$

Find the vertical and horizontal asymptotes of $f(x) = \frac{4x-4}{x+4}$.

**8.** VA $x = -6$; HA $y = 1$

1. Denominator $= 0$: $x + 6 = 0 \Rightarrow x = -6$
2. Equal degrees: $y = \dfrac{1}{1} = 1$

Find the vertical and horizontal asymptotes of $f(x) = \frac{x-6}{x+6}$.

**9.** VA $x = -4$; HA $y = 3$

1. Denominator $= 0$: $x + 4 = 0 \Rightarrow x = -4$
2. Equal degrees: $y = \dfrac{3}{1} = 3$

Find the vertical and horizontal asymptotes of $f(x) = \frac{3x+3}{x+4}$.

**10.** VA $x = -6$; HA $y = 1$

1. Denominator $= 0$: $x + 6 = 0 \Rightarrow x = -6$
2. Equal degrees: $y = \dfrac{1}{1} = 1$

Find the vertical and horizontal asymptotes of $f(x) = \frac{x+3}{x+6}$.