

U1L5 Rational Functions Mix & Match - Complete the following chart for each problem.

Function	Factored Form	Horizontal Asymptote	Vertical Asymptote	Holes	x-intercepts	y-intercept	Domain	Graph Number
1. $\frac{x^2+4x}{2x^2-2x-4}$	$\frac{(x+4)x}{2(x-2)(x+1)}$	$y = \frac{1}{2}$ $y = 2$	$x = 1, x = 2$	—	$(-4, 0)$ $(0, 0)$	$(0, 0)$	$x \in \mathbb{R}, x \neq 1, 2$	6
2. $\frac{2}{x} + 1$	$\frac{2+x}{x}$	$y = 1$	$x = 0$	—	$(-2, 0)$ $(-2, 0)$	—	$x \in \mathbb{R}, x \neq 0$	8
3. $\frac{x^2-5x+4}{3x^2-12}$	$\frac{(x-4)(x-1)}{3(x+2)(x-2)}$	$y = \frac{1}{3}$	$x = 2, x = -2$	—	$(-3, 0)$ $(4, 0) + (1, 0)$	$(0, -\frac{1}{3})$	$x \in \mathbb{R}, x \neq 2, -2$	1
4. $\frac{x^3+4x^2+3x}{-3x^2-6x}$	$\frac{x(x+3)(x+1)}{-3x(x+2)}$	—	$x = -2$	$(0, -\frac{1}{2})$	$(-3, 0)$ $(-1, 0)$	—	$x \in \mathbb{R}, x \neq -2, 0$	10
5. $\frac{x^3-x^2-12x}{4x^2-8x}$	$\frac{x(x-4)(x+3)}{4x(x-2)}$	—	$x = 2$	$(0, \frac{3}{2})$	$(-3, 0)$ $(4, 0)$	—	$x \in \mathbb{R}, x \neq 2, 0$	3
6. $\frac{x^3+6x^2+8x}{-4x^2-16x}$	$\frac{x(x+4)(x+2)}{-4x(x+4)}$	—	—	$(0, -\frac{1}{2})$ $(-4, \frac{1}{2})$	$(-2, 0)$	—	$x \in \mathbb{R}, x \neq 0, -4$	11
7. $\frac{x^2-9}{-3x+6}$	$\frac{(x+3)(x-3)}{-3(x+2)}$	—	$x = 2$	—	$(3, 0)$ $(-3, 0)$	$(0, -\frac{3}{2})$	$x \in \mathbb{R}, x \neq 2$	9
8. $\frac{x^2-16}{-3x^2-9x+12}$	$\frac{(x+4)(x-4)}{-3(x+4)(x-1)}$	$y = -\frac{1}{3}$	$x = 1$	$(-4, -\frac{8}{5})$	$(4, 0)$	$(0, -\frac{4}{3})$	$x \in \mathbb{R}, x \neq 1$	7
9. $\frac{x^2-5x+4}{x^2-6x+8}$	$\frac{(x-4)(x-1)}{(x-4)(x-2)}$	$y = 1$	$x = 2$	$(4, \frac{3}{2})$	$(1, 0)$	$(0, \frac{1}{2})$	$x \in \mathbb{R}, x \neq 2, 4$	4
10. $\frac{-2x^2-8x^2-6x}{x^3-4x}$	$\frac{-2x(x+3)(x+1)}{x(x-2)(x+2)}$	$y = -2$	$x = 2, x = -2$	$(0, \frac{3}{2})$	$(-3, 0)$ $(-1, 0)$	$(0, 0)$	$x \in \mathbb{R}, x \neq -2, 0, 2$	12
11. $\frac{x^2+3x-4}{-4x-12}$	$\frac{(x+4)(x-1)}{-4(x+3)}$	—	$x = -3$	—	$(-4, 0)$ $(1, 0)$	$(0, \frac{1}{3})$	$x \in \mathbb{R}, x \neq -3$	2
12. $\frac{-2x^2+2x}{x^2-5x+4}$	$\frac{-2x(x+1)}{(x-4)(x-1)}$	$y = -2$	$x = 4$	$(1, \frac{2}{3})$	$(0, 0)$	$(0, 0)$	$x \in \mathbb{R}, x \neq 4, 1$	5