

# Homework 01-05

Name: \_\_\_\_\_

Date: \_\_\_\_\_

PC: Vertical, Horizontal and Oblique Asymptotes

Ms. Loughran

Function	Hole(s)	Vertical Asymptote(s)	Horizontal Asymptote	Oblique Asymptote	x-intercept(s)	y-intercept
① $y = \frac{x+2}{x^2-16}$ $(x-4)(x+4)$	none	$(x-4)(x+4)=0$ $x = \pm 4$	$y = 0$	none	$\frac{(x+2)}{(x+4)(x-4)} = \frac{0}{1}$ $x+2=0$ $x = -2$ $(-2, 0)$	$y = \frac{0+2}{(0+4)(0-4)}$ $y = \frac{2}{-16}$ $(0, -\frac{1}{8})$
② $y = \frac{x^2-16}{x+2}$ $(x-4)(x+4)$	none	$x = -2$	none	$y = x-2$	$(\pm 4, 0)$	$(0, -8)$
③ $y = \frac{2x^2}{x^2+4}$	none	none	$y = 2$	none	$(0, 0)$	$(0, 0)$
④ $y = \frac{2x^2+3x}{x}$	$(0, 3)$	none	none	none	$(-\frac{3}{2}, 0)$	none bl of hole
⑤ $y = \frac{3x+21}{9-x}$	none	$x = 9$	$y = -3$	none	$(-7, 0)$	$(0, \frac{7}{3})$
⑥ $y = \frac{1}{(x+6)(x-1)}$	none	$x = -6, 1$	$y = 0$	none	none	$(0, -\frac{1}{6})$

$$Q = \frac{1}{(x+6)(x-1)} \quad y = \frac{1}{(0+6)(0-1)}$$

$$0 \neq 1$$

Name: \_\_\_\_\_  
 PC :More Vertical, Horizontal and Oblique Asymptotes

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Function	Hole(s)	Vertical Asymptote(s)	Horizontal Asymptote	Oblique Asymptote	x-intercept(s)	y-intercept
$y = \frac{x-5}{x^2-4x-5}$ $(x-5)(x+1)$	$(5, \frac{1}{6})$	$x = -1$	$y = 0$	none	none	$(0, 1)$
$y = \frac{2x+1}{x^2}$	none	$x = 0$	$y = 0$	none	$(-\frac{1}{2}, 0)$	none
$y = \frac{x-5}{x^2+1}$	none	none	$y = 0$	none	$(5, 0)$	$(0, -5)$
$y = \frac{2x}{x^2-x-6}$	none	$x = 3, -2$	$y = 0$	none	$(0, 0)$	$(0, 0)$
$y = \frac{-3x^2+2}{x-1}$	none	$x = 1$	none	$y = -3x-3$	$(\pm\sqrt{\frac{2}{3}}, 0)$	$(0, -2)$
$y = \frac{2x^3-17x^2-8x-9}{3-x^2}$	none	$x = \pm\sqrt{3}$	none	$y = -2x+7$	$(9, 0)$	$(0, -3)$

RF  
 $y = \frac{1}{x+1}$

To find x-int: let  $y=0$   
 $2x^3 - 17x^2 - 8x - 9 = 0$

prz:  $\frac{\pm 1 \pm 9}{\pm 1 \pm 2} = \pm 1, \pm 9, \pm \frac{1}{2}, \pm \frac{9}{2}$

9 is a zero

$$\begin{array}{r} 9 \overline{) 2 \ -17 \ -8 \ -9} \\ \underline{18 \ \ 9 \ \ 9} \\ 2 \ \ 1 \ \ 1 \ \ 0 \end{array}$$

$2x^2 + x + 1 = 0$

$x = \frac{-1 \pm \sqrt{1^2 - 4(2)(1)}}{2(2)}$  imaginary

