

## xx-2-6-C Practice Problems

Determine the key points of each rational function. Key points are root(s), vertical asymptote(s), and the horizontal asymptote (if it exists).

$$21. f(x) = \frac{x - 3}{x^2 - 3x} \quad 22. f(x) = \frac{2x - 8}{x^2 - 9x + 20}$$

$$23. f(x) = 4 - \frac{1}{x} \quad 24. f(x) = 2 + \frac{1}{x - 3}$$

$$25. f(x) = \frac{2x - 1}{x - 3} \quad 26. f(x) = \frac{2x - 1}{x^2 + 1}$$

$$27. f(x) = \frac{x^2 - 9}{x + 1} \quad 28. f(x) = \frac{x^3 - 8}{x^2 + 4}$$

$$29. f(x) = 1 - \frac{2}{x - 5}$$

$$30. f(x) = 6 + \frac{4}{x^2 + 2}$$

## Answer Key

Root(s) ; Vertical Asymptote(s) ; Horizontal Asymptote ; Removable Discontinuity

21. *none* ;  $x = 0$  ;  $y = 0$  ;  $x = 3$

22. *none* ;  $x = 5$  ;  $y = 0$  ;  $x = 4$

23.  $x = \frac{1}{4}$  ;  $x = 0$  ;  $y = 4$  ; *none*

24.  $x = \frac{5}{2}$  ;  $x = 3$  ;  $y = 2$  ; *none*

25.  $x = \frac{1}{2}$  ;  $x = 3$  ;  $y = 2$  ; *none*

26.  $x = \frac{1}{2}$  ; *none* ;  $y = 0$  ; *none*

27.  $x = \pm 3$  ;  $x = -1$  ; *none* ; *none*

28.  $x = 2$  ; *none* ; *none* ; *none*

29.  $x = 7$  ;  $x = 5$  ;  $y = 1$  ; *none*

30. *none* ; *none* ;  $y = 6$  ; *none*