

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

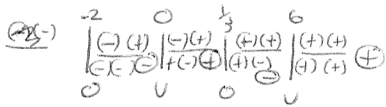
1. Domain  $(-\infty, 0) \cup (0, 6) \cup (6, \infty)$

2. x-int  $3x-1=0 \quad x+2=0$   
 $x = 1/3 \quad x = -2$

y-int  $\frac{2}{0} \rightarrow$  none

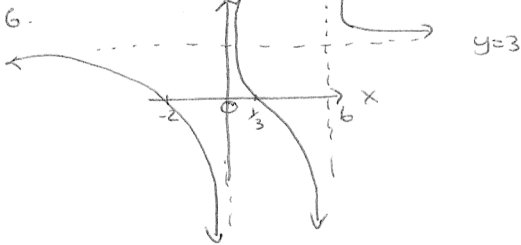
3. HA  
 $\lim_{x \rightarrow \infty} \frac{3x^2}{x^2} = 3^+$   
 $\lim_{x \rightarrow -\infty} \frac{3x^2}{x^2} = 3^-$   
 $y = 3$

4. VA  
 $x = 0, 6$



$\lim_{x \rightarrow 0^-} g(x) \rightarrow -\infty$      $\lim_{x \rightarrow 6^-} g(x) \rightarrow -\infty$   
 $\lim_{x \rightarrow 0^+} g(x) \rightarrow \infty$      $\lim_{x \rightarrow 6^+} g(x) \rightarrow \infty$

5.  $x = 0, 6$  both infinite discontinuities



7. Range  $(-\infty, \infty)$

6.  $h(x) = \frac{x^2 - 5x - 14}{x - 7} = \frac{(x+2)(x-7)}{(x-7)} = x+2$

1. Domain  $(-\infty, 7) \cup (7, \infty)$

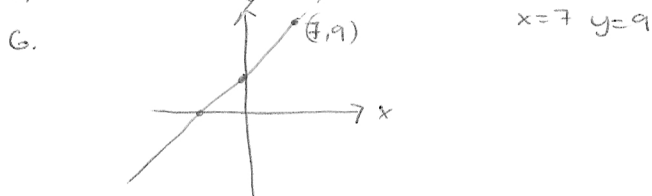
2. x-int  $x = -2$   
 y-int  $y = 2$

3. No horizontal asymptotes

slant asymptotes  $x+2$   
 $x-7 \mid x^2 - 5x - 14$   
 $\frac{x^2 - 7x}{2x - 14}$

4. No VA

5. Removable discontinuity @  $x = 7$



7. Range  $(-\infty, 9) \cup (9, \infty)$

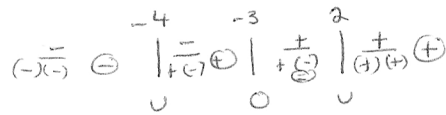
7.  $f(x) = \frac{x+3}{x^2 + 2x - 8} = \frac{x+3}{(x+4)(x-2)}$

1. Domain  $(-\infty, -4) \cup (-4, 2) \cup (2, \infty)$

2. x-int  $x = -3$   
 y-int  $y = -3/8$

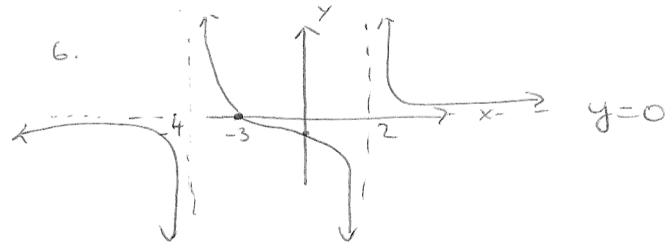
3. HA  
 $\lim_{x \rightarrow \infty} \frac{x}{x^2} = \frac{1}{x} \rightarrow 0^+$   
 $\lim_{x \rightarrow -\infty} \frac{x}{x^2} = \frac{1}{x} \rightarrow 0^-$   
 $y = 0$

4. VA  
 $x = -4, 2$



$\lim_{x \rightarrow -4^-} f(x) \rightarrow -\infty$      $\lim_{x \rightarrow 2^-} f(x) \rightarrow -\infty$   
 $\lim_{x \rightarrow -4^+} f(x) \rightarrow \infty$      $\lim_{x \rightarrow 2^+} f(x) \rightarrow \infty$

5.  $x = -4, 2$  both infinite discontinuities



7. Range  $(-\infty, \infty)$

8.  $g(x) = \frac{5x^2 - 3x - 2}{x^2 - 1} = \frac{(5x+2)(x-1)}{(x-1)(x+1)} = \frac{5x+2}{x+1}$

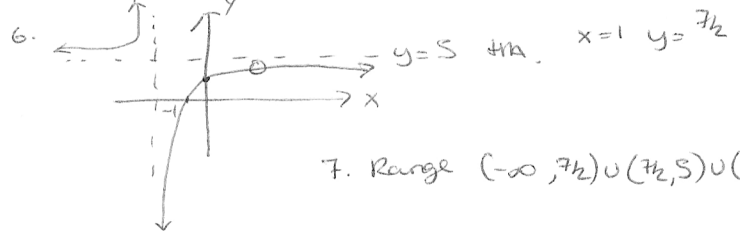
1. Domain  $(-\infty, -1) \cup (-1, 1) \cup (1, \infty)$

2. x-int  $x = -2/5$   
 y-int  $y = 2$

3. HA  
 $\lim_{x \rightarrow \infty} \frac{5x^2}{x^2} = 5^+$   
 $\lim_{x \rightarrow -\infty} \frac{5x^2}{x^2} = 5^-$   
 $y = 5$  HA.

4. VA  
 $x = -1$   
 $\lim_{x \rightarrow -1^-} g(x) \rightarrow \infty$   
 $\lim_{x \rightarrow -1^+} g(x) \rightarrow -\infty$

5.  $x = -1$  Infinite discontinuity;  $x = 1$  Removable



7. Range  $(-\infty, 7/2) \cup (7/2, 5) \cup (5, \infty)$