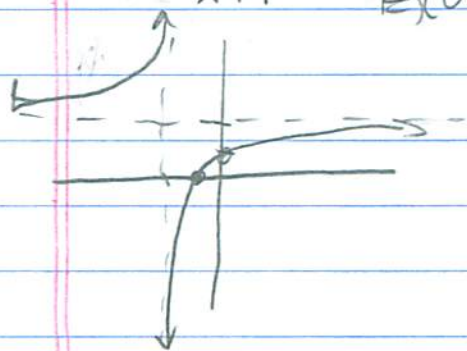
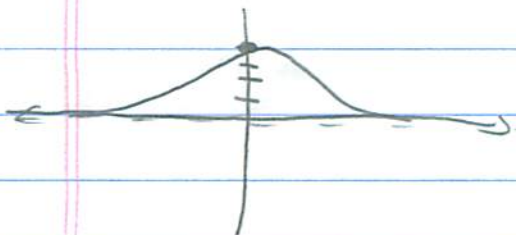


# Rationals Supplement 9.2 & 9.3

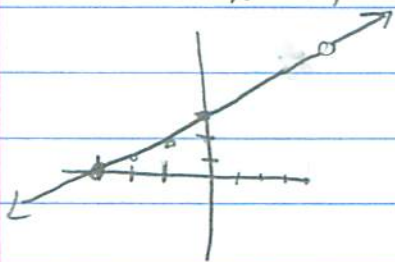
①  $y = \frac{2x+1}{x+1}$  A) VA:  $x=-1$  B)  $y=2$  C) None D)  $(-\frac{1}{2}, 0)$   
 E)  $(0, 1)$  F) None G)  $\lim_{x \rightarrow \infty} y = 2$  H)  $\lim_{x \rightarrow -\infty} y = 2$



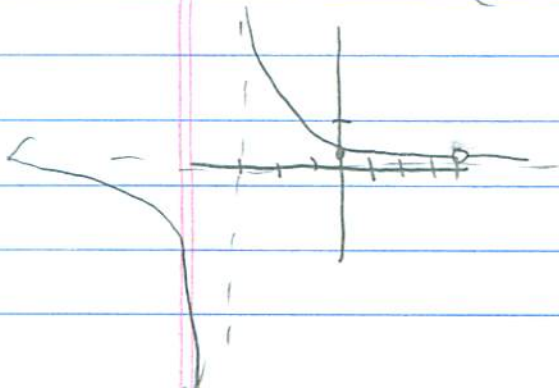
②  $y = \frac{4}{x^2+1}$  A) None B)  $y=0$  C) None D)  $\emptyset$  E)  $(0, 4)$   
 F)  $\emptyset$  G)  $\lim_{x \rightarrow \infty} y = 0$  H)  $\lim_{x \rightarrow -\infty} y = 0$



③  $y = \frac{x^2 - x - 12}{x - 4} = \frac{(x-4)(x+3)}{x-4} = x+3$  A) None B) None C)  $\lim_{x \rightarrow 4} y = 7$   
 D)  $(-3, 0)$  E)  $(0, 3)$  F)  $(4, 7)$   
 G)  $\lim_{x \rightarrow \infty} y = \infty$  H)  $\lim_{x \rightarrow -\infty} y = -\infty$

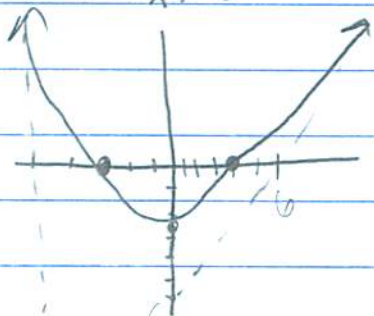


④  $y = \frac{x-4}{x^2-x-12} = \frac{x-4}{(x-4)(x+3)} = \frac{1}{x+3}$  A)  $x=-3$  B)  $y=0$  C)  $\emptyset$  D)  $\emptyset$  E)  $(0, 1/3)$   
 F)  $(4, 1/7)$  G)  $\lim_{x \rightarrow \infty} y = 0$  H)  $\lim_{x \rightarrow -\infty} y = 0$

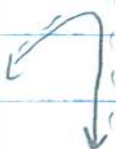


$$-5 \begin{array}{r|rr} 1 & -1 & -12 \\ \downarrow & -5 & 30 \\ \hline & -6 & 18 \end{array}$$

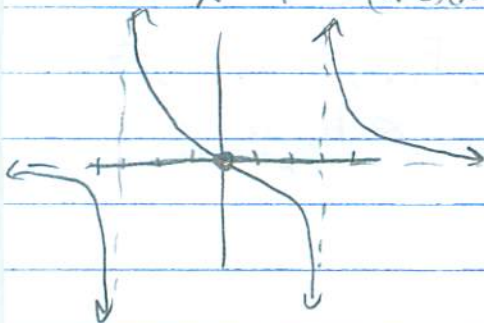
⑤  $y = \frac{x^2 - x - 12}{x + 5} = \frac{(x-4)(x+3)}{x+5}$  A)  $x = -5$  B)  $\emptyset$  C)  $y = x - 6$  D)  $(4, 0)$   $(-3, 0)$   
 E)  $(0, -12/5)$  F)  $\emptyset$  G)  $\lim_{x \rightarrow \infty} y = \infty$



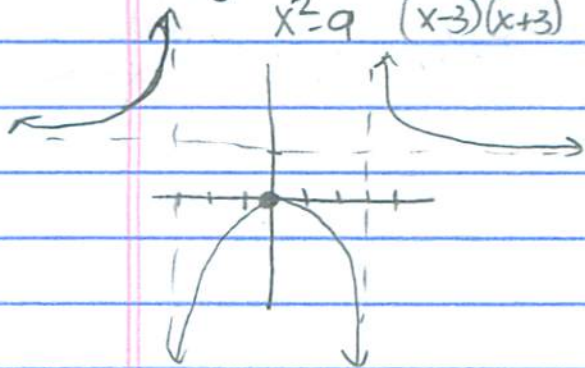
H)  $\lim_{x \rightarrow -\infty} y = -\infty$



⑥  $y = \frac{x}{x^2 - 9} = \frac{x}{(x-3)(x+3)}$  A)  $x = 3, x = -3$  B)  $y = 0$  C)  $\emptyset$  D)  $(0, 0)$  E)  $(0, 0)$   
 F)  $\emptyset$  G)  $\lim_{x \rightarrow \infty} y = 0$  H)  $\lim_{x \rightarrow -\infty} y = 0$

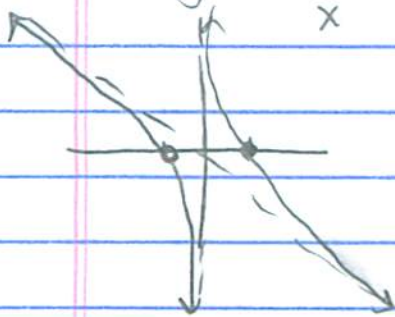


⑦  $y = \frac{x^2}{x^2-9} = \frac{x^2}{(x-3)(x+3)}$  A)  $x=3, x=-3$  B)  $y=1$  C)  $\emptyset$  D)  $(9,0)$  E)  $(0,0)$   
 F)  $\emptyset$  G)  $\lim_{x \rightarrow \infty} y = 1$  H)  $\lim_{x \rightarrow -\infty} y = 1$



$0 \begin{array}{c|ccc} -1 & 0 & 1 \\ \hline \downarrow & 0 & 1 \\ -1 & 0 & 1 \end{array} y = x$

⑧  $y = \frac{1-x^2}{x} = \frac{(1-x)(1+x)}{x}$  A)  $x=0$  B)  $\emptyset$  C)  $y=-x$  D)  $(1,0)$   $(-1,0)$   
 E)  $\emptyset$  F)  $\emptyset$  G)  $\lim_{x \rightarrow \infty} y = -\infty$  H)  $\lim_{x \rightarrow -\infty} y = \infty$



$-1 \begin{array}{c|ccc} 2 & 1 & 0 \\ \hline \downarrow & -2 & 1 \\ 2 & -1 & 1 \end{array} y = 2x - 1$

⑨  $y = \frac{2x^2+x}{x+1} = \frac{x(2x+1)}{x+1}$  A)  $x=-1$  B)  $\emptyset$  C)  $y=2x-1$  D)  $(0,0)$   $(-1/2,0)$   
 E)  $(0,0)$  F)  $\emptyset$  G)  $\lim_{x \rightarrow \infty} y = \infty$



H)  $\lim_{x \rightarrow -\infty} y = -\infty$

10)  $y = \frac{x+4}{x^2-8x-9} = \frac{x+4}{(x-9)(x+1)}$ 
 A)  $x=9$   $x=-1$  B)  $y=0$  C)  $\emptyset$  D)  $(-4, 0)$   
 E)  $(0, -4/9)$  F)  $\emptyset$  G)  $\lim_{x \rightarrow \infty} y = 0$  H)  $\lim_{x \rightarrow -\infty} y = 0$

