Review Rational Functions

1) Give the horizontal asymptote: $f(x)=\dfrac{2x^2+3}{3x^2-5}$

2) Give the vertical asymptote(s): $f(x)=\dfrac{x-2}{x^2+x-6}$

3) Give the x-intercept: $f(x)=\dfrac{x(x+2)}{x-5}$

4) Give the y-intercept: $f(x)=\dfrac{x^2+2x-2}{x^3+3x-1}$

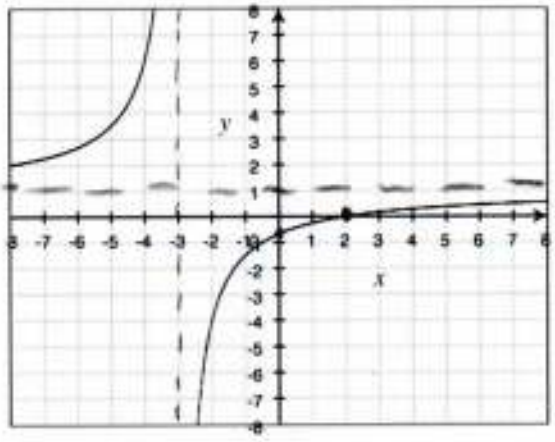
5) Give the coordinates of the hole: $f(x)=\dfrac{x^2+3x-4}{x^2-16}$

6) Give the vertical asymptotes: $f(x)=\dfrac{x+2}{x^2+1}$

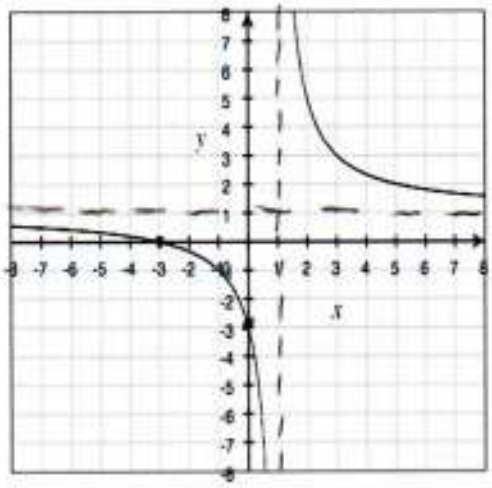
7) Give the x-int: $f(x)=\dfrac{x^2-1}{x+2}$

8) Give the horizontal asymptote: $f(x)=\dfrac{3}{x^2+3}$

9) Give the rational function



10) Give the rational function



11) Give the domain: $f(x) = \dfrac{x+4}{x^2-16}$

12) Give the range: $f(x) = x^3 + 3x^2 + x - 2$

13) Give the domain: $f(x) = \dfrac{x+2}{x^2+1}$

14) Give the domain: $f(x) = \sqrt{x-5}$

15) Give the range: $f(x) = \sqrt{x-5}$

16) Give the domain: $f(x) = \dfrac{3}{\sqrt{2-x}}$

17) Give the x-int: $f(x) = \dfrac{4}{x^2+2}$

18) Give the y-int: $f(x)=\dfrac{4}{x^2-1}$

19) Give the hole: $f(x)=\dfrac{x-2}{x^2-4}$

20) Give the VA: $f(x)=\dfrac{x-2}{x^2-4}$

21) Give the HA: $f(x)=\dfrac{3x^2}{x^2+x+2}$

22) Graph: $f(x)=\begin{cases} x^2 & \text{if } x<0 \\ x-1 & \text{if } x\geq 0 \end{cases}$

23) Graph: $f(x)=\begin{cases} |x|+2 & \text{if } x<0 \\ \sqrt{x}+2 & \text{if } x\geq 0 \end{cases}$

24) Graph: $f(x)=\begin{cases} (x+2)^3 & \text{if } x<-1 \\ x^2 & \text{if } x>-1 \end{cases}$

25) Graph: $f(x)=\begin{cases} x-2 & \text{if } x\leq -2 \\ \sqrt[3]{x+2} & \text{if } x>-2 \end{cases}$

# Review Answers

① $y = \frac{2}{3}$

② $x = -3$

③ $(0,0)\ (-2,0)$

④ $(0,2)$

⑤ $\left(-4, \frac{5}{8}\right)$

⑥ none

⑦ $(\pm 1, 0)$

⑧ $y = 0$

⑨ $f(x) = \frac{x-2}{x+3}$

⑩ $f(x) = \frac{x+3}{x-1}$

⑪ $\mathbb{R}$ except $\pm 4$

⑫ $\mathbb{R}$

⑬ $\mathbb{R}$

⑭ $[5, \infty)$

⑮ $[0, \infty)$

⑯ $(-\infty, 2]$

⑰ none

⑱ $(0, -4)$

⑲ $(2, \frac{1}{4})$

⑳ $x = -2$

㉑ $y = 3$

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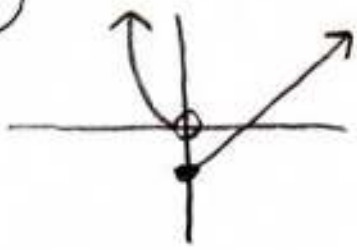

D: $\mathbb{R}$
R: $[-1, \infty$

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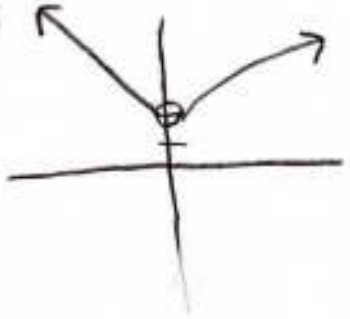

D: $\mathbb{R}$
R: $[2,$

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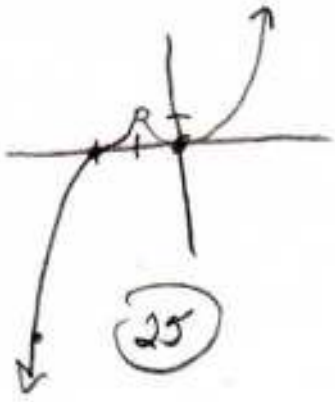

D: $\mathbb{R}$ ex
R: $\mathbb{R}$

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