## Directions: Read each question carefully. Show appropriate supporting work where necessary to receive full credit.

## NO CALCULATOR!

1) Solve the equation. SHOW WORK!

$$
\frac{x}{x+2}+\frac{5}{x-3}=\frac{25}{x^{2}-x-6}
$$

2) For the function $f(x)=\frac{x-2}{x^{2}-2 x-3}$, find all asymptotes and intercepts. SHOW appropriate supporting work! Then graph it and write the end behavior limits.

3) For the function $h(x)=\frac{x^{2}+4 x-5}{x+3}$, find all asymptotes and intercepts. SHOW appropriate supporting work! Then graph it and write the end behavior limits.

4) Solve the inequality using a sign chart.

$$
(x+3)\left(x^{2}+4\right)(x+1)^{2}>0
$$

5) Solve the inequality using a sign chart.

$$
\frac{\sqrt{x+5}}{x-3} \leq 0
$$

## CALCULATOR OK!

6) A box is to be built out of a rectangular sheet of cardboard with dimensions 15 by 20 inches, by cutting squares out of each corner of the cardboard with length $x$.
A) Write an equation that models the volume of the box.
B) What values of $x$ (the cut) will give a box with a volume of at least 150 cubic inches?
