Sec. 11.3

For what values of the variable is each rational expression undefined?

Set denominator = 0 and solve

a. $\frac{10x}{x-3}$

$x-3=0$

$+3 \quad +3$

$\boxed{x=3}$

b. $\frac{r-6}{r}$

$r=0$

$\boxed{r=0}$

c. $\frac{k-3}{5-k}$

$5-k=0$

$\boxed{k=5}$

d. $\frac{x+1}{x^2-3x+2}$

$x^2-3x+2=0$

$(x-1)(x-2)=0$

$x-1=0 \quad x-2=0$

$+1 \quad +1 \quad +2 \quad +2$

$\boxed{x=1} \quad \boxed{x=2}$

Simplify each expression and state any restrictions on the variables.

a. $\dfrac{x^2+5x}{x^2+2x-15}$ (1, 15; 3, 5) $= \dfrac{x(x+5)}{(x+5)(x-3)} = 0$

$x+5=0 \quad x-3=0$

$-5\ -5 \quad +3\ +3$

$x \neq -5 \quad x \neq 3$

$\dfrac{x}{x-3}$, $x \neq -5, 3$

b. $\dfrac{-(a+1)}{a^2+8a+7}$ (1, 7) $= \dfrac{-(a+1)}{(a+1)(a+7)} = 0$

$a+1=0 \quad a+7=0$

$-1\ -1 \quad -7\ -7$

$a=-1 \quad a=-7$

$\dfrac{-1}{a+7}$, $a \neq -1, -7$