5) The equation $\sqrt{3x+1}=\sqrt{x+4}+1$, has

A) Two solutions in $(-2,8)$

B) One solution in $(2,8)$

C) Two solutions in $(-2,8)$

D) Two solutions in $(-8,8)$

E) One solution in $(-8,2)$

$3x+1 = x+4 + 2\sqrt{x+4} + 1$

$2\sqrt{x+4} = 2x-4$

$\sqrt{x+4} = x-2$

$x+4 = x^2-4x+4$

$x^2-5x=0$

$x(x-5)=0$

Check $x=0$, $\sqrt{1} = \sqrt{4}+1$ ×

$x=5$, $\sqrt{16} = \sqrt{9}+1$ ✓

$SS=\{5\}$

6) The solution set for $\frac{1}{x-1} \le \frac{2}{x+3}$ is

A) $[5,\infty)$

B) $[-3,1]\cup[5,\infty)$

C) $(-\infty,-3)\cup[1,5)$

D) $(-\infty,-3]\cup[1,5]$

E) $(-3,1)\cup[5,\infty)$

$\frac{1}{x-1} - \frac{2}{x+3} \le 0$

$\frac{x+3-2x+2}{(x-1)(x+3)} \le 0$

$\frac{-x+5}{(x-1)(x+3)} \le 0$

$\frac{x-5}{(x-1)(x+3)} \ge 0$

	−3	1	5	
$x-5$	−	−	0	+
$x-1$	−	0	+	+
$x+3$	0	+	+	+
	−	+	0	+

$SS = (-3,1)\cup[5,\infty)$

7) The set of values of k for which the equation $x^2+kx=k$ has one or two real solutions in x is

A) $(-4,0)$

B) $(-\infty,-4]\cup[0,\infty)$

C) $(-\infty,0]\cup[4,\infty)$

D) $[0,4]$

E) $(-\infty,-4)\cup(0,\infty)$

$x^2+kx-k=0$

1 or 2 real sol^{n}

$\Rightarrow \Delta \ge 0$

$k^2-4(-k)\ge 0$

$k(k+4)\ge 0$

	−4	0	
k	−	0	+
$k+4$	0	+	+
	+	0	−	0	+

$(-\infty,-4]\cup[0,\infty)$