

5.8

1) $x^2 > x$

$x^2 - x > 0$

$x(x-1) > 0$

		0		1		
x		-	0	+		+
$x - 1$		-		-	0	+
$P(x)$		+	0	-	0	+

$S =]-\infty; 0[\cup]1; +\infty[$

2) $x^3 < 4x$

$x^3 - 4x < 0$

$x(x^2 - 4) < 0$

$x(x-2)(x+2) < 0$

		-2		0		2		
x		-		-	0	+		+
$x - 2$		-		-		-	0	+
$x + 2$		-	0	+		+		+
$P(x)$		-	0	+	0	-	0	+

$S =]-\infty; -2[\cup]0; 2[$

3) $x^2 - 3x > -2$

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

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

		1		2		
$x - 1$		-	0	+		+
$x - 2$		-		-	0	+
$P(x)$		+	0	-	0	+

$S =]-\infty; 1[\cup]2; +\infty[$

4) $(x-2)^2 > 4(x-1)^2$

$(x-2)^2 - 4(x-1)^2 > 0$

$(x-2)^2 - (2(x-1))^2 > 0$

$((x-2) - 2(x-1))((x-2) + 2(x-1)) > 0$

$-x(3x-4) > 0$

		0		$\frac{4}{3}$		
$-x$		+	0	-		-
$3x-4$		-		-	0	+
$P(x)$		-	0	+	0	-

$S =]0; \frac{4}{3}[$

$$5) \quad x^3 - 1 < x^2 - 2x + 1$$

$$(x^3 - 1) - (x^2 - 2x + 1) < 0$$

$$(x - 1)(x^2 + x + 1) - (x - 1)^2 < 0$$

$$(x - 1)((x^2 + x + 1) - (x - 1)) < 0$$

$$(x - 1)(x^2 + 2) < 0$$

			1		
$x - 1$	-	0	+		
$x^2 + 2$	+		+		
P(x)	-	0	+		

$$\Delta = 0^2 - 4 \cdot 1 \cdot 2 = -8 < 0$$

$$S =] - \infty ; 1 [$$

$$6) \quad (x + 3)^2 > 5(x + 3)(x - 2)$$

$$(x + 3)^2 - 5(x + 3)(x - 2) > 0$$

$$(x + 3)((x + 3) - 5(x - 2)) > 0$$

$$(x + 3)(-4x + 13) > 0$$

			-3		$\frac{13}{4}$	
$x + 3$	-	0	+		+	
$-4x + 13$	+		+	0	-	
P(x)	-	0	+	0	-	

$$S =] - 3 ; \frac{13}{4} [$$

$$7) \quad (x - 1)^2(x - 2) < (x^2 - 1)(2 - x)$$

$$(x - 1)^2(x - 2) - (x^2 - 1)(2 - x) < 0$$

$$(x - 1)^2(x - 2) + (x - 1)(x + 1)(x - 2) < 0$$

$$(x - 1)(x - 2)((x - 1) + (x + 1)) < 0$$

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

		0		1		2	
$2x$	-	0	+		+	0	+
$x - 1$	-		-	0	+		+
$x - 2$	-		-		-	0	+
P(x)	-	0	+	0	-	0	+

$$S =] - \infty ; 0 [\cup] 1 ; 2 [$$

$$8) \quad (2x - 1)^2 > 9(2 - x)^2$$

$$(2x - 1)^2 - 9(2 - x)^2 > 0$$

$$((2x - 1) - 3(2 - x))((2x - 1) + 3(2 - x)) > 0$$

$$(5x - 7)(-x + 5) > 0$$

		$\frac{7}{5}$		5	
$5x - 7$	-	0	+		+
$-x + 5$	+		+	0	-
P(x)	-	0	+	0	-

$$S =] \frac{7}{5} ; 5 [$$