MATHEMATICS 17 **EXERCISE 6**

I. Find the solution set

1. Equations

(a) $2+\sqrt{\sqrt{16-2x+x^2}}=0$

(b) $\dfrac{x+3}{x-1}-10\dfrac{x-1}{x+3}=3$

(c) $1+x^2=2x+\sqrt{1-x}$

(d) $2\sqrt{5-x}=\sqrt{3}x$

(e) $3x-6x^{-1}\sqrt{x}+2=0$

(f) $\sqrt{1-2x}-\sqrt{16-x}=5$

(g) $2\left(x^2+x+1\right)+\sqrt{x^2+x+1}-3=0$

(h) $\sqrt{t}\sqrt{t-6}+4=0$

(i) $\sqrt{x+\sqrt{x-2}}=2$

(j) $x^{-6}-8=7x^{-3}$

(k) $\dfrac{x\left(x-3\right)}{1-x}+\dfrac{3x-4}{x-1}=4$

2. Inequalities

(a) $x+1>\dfrac{2x-4}{5}$

(b) $\dfrac{2x-7}{x^2-6x+8}\leq 1$

(c) $16t^2+1\geq 8t$

(d) $5\leq 2x-3\leq 13$

(e) $\dfrac{5x}{x^2+2x-8}\geq 3$

(f) $\dfrac{x^2+x-6}{2x^2+3x-5}\geq 1$

(g) $\dfrac{2x^2+2x+5}{x^2-2x+1}>1$

(h) $\dfrac{6x^2-x+2}{9x^2+12x+4}\geq 0$

II. Do as Indicated

1. Evaluate $\sqrt{4x+5}-\sqrt{2x-1}=\sqrt{2x-6}$.
[Hint: For three to four square roots, place 2 square roots in one side then square both sides.]

2. What is the domain of the equation $\sqrt{x^2-2x-3}=\sqrt{x^2+6-5x}$?

3. At what values of k such that the equation $y=x^2+2\sqrt{3}x-4+k$ will not intersect the x axis?

Examples from CAT by Castillo, et. al, CAT by Leithold

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