

Review of Equations/Inequalities

① Solve the following equations/inequalities.
(write the set of all solutions)

a) $0x = 0$ b) $0x = 3$ c) $0x < -4$ d) $0x \geq 0$

e) $x^2 - 3x + 4 \geq 0$ f) $4x^2 - 1 < 0$

g) $-3x(2x-1)^3(5-x)^2 < 0$

h) $(2x^4 - x^2)(x^2 - 4)^2(5-x) < 0$

i) $\frac{-(1-x)(3+x)(-3+x)}{(x+2)^2(x+1)^3} \geq 0$

j) $\frac{-x^2(3-x)(x^2+3x+2)(x^2-3)}{3(x+1)} \geq 0$

② Likewise solve

a) $\frac{x+1}{x-1} < \frac{2x+3}{x+1}$ b) $\frac{(x+1)^3 - 1}{(x-1)^3 - 1} \leq 1$

c) $\frac{x-10}{x^2+5} < \frac{1}{2}$ d) $\frac{3x}{5x-2} \geq 1$

③ Solve the parametric equations wrt x .

a) $a^2x + 2 = 2ax + x + a$

b) $a^2(x-1) + 6x + 2 = a(5x-1)$

c) $(2+a^2)x = a^2(x+3) - 5x$

$$d) (a^2 - b^2)x^2 - 2a^2bx + a^2b^2 = 0$$

$$e) 6x^2 + 2(9a + 2b)x + 12ab = 0$$

$$f) x^2 - (2a - 3b)x - 6ab = 0.$$