Name: __AK - all solutions are on scevmath.org 1.6 to 1.8 Review__

1.6-1.8 Review

1. Solve each equation for x.

a) $\dfrac{3x-10}{x-5} = \dfrac{11}{x^2-25} + 7$ $X = 6, -19/4$

b) $\dfrac{18}{x^2-9x} + \dfrac{10}{x} = \dfrac{2}{x-9}$ ϕ

$\left(9 \text{ is not in domain} \right)$

c) $\left| x^2 - 3x \right| = 3x - 5$ $5, \sqrt{5}$

$1 \text{ and } -\sqrt{5} \text{ are extraneous}$

d) $\sqrt{x+10} - \sqrt{x-6} = 2$ $X = 15$

e) $\sqrt{x+9} + x = 3x - 10$ $X = 13/4, 7$

2. Solve each quadratic for x by factoring and/or a substitution.

a) $1 = 64x^6$ $\pm \frac{1}{2}, -1 \pm i\sqrt{3}, 1 \pm i\sqrt{3}$

b) $\left(x^2 - 13x + 6\right)^{3/2} = 216$ $x = 15, -2$

c) $x^6 - 26x^3 - 27 = 0$ $x = 3, -1, \dfrac{-1 \pm i\sqrt{3}}{2}, \dfrac{-3 \pm 3i\sqrt{3}}{2}$

d) $6x^{1/2} - 11x^{1/4} - 35 = 0$ $x = \dfrac{2401}{8}$ $x = -\frac{5}{3}$ is extraneous.

3C. Solve each quadratic using the quadratic formula and/or a substitution.

a) $8(x-3)^2 + 8(x-3) = 14$

$x = \dfrac{5}{2} \pm \sqrt{2}$

b) $3x - 5x^2 = 1$

$x = \dfrac{3 \pm i\sqrt{11}}{10}$

3. Find all real x values that satisfies each inequality. Put your answers in interval notation and as a graph.

a) $\left|4-\dfrac{2}{3}x\right| \le 16$ $\qquad X \in [-18, 30]$

b) $|3-4x| > 7-x$ $\qquad X \in \left(-\infty, -\dfrac{4}{3}\right) \cup (2, \infty)$

c) $(x-4)^2 - 16 > 20$ $\qquad X \in (-\infty, -2) \cup (10, \infty)$

d) $4x^5 + 17x^3 + 4x < 0$ $\qquad (\infty, 0)$

e) $-3x^2 + x - 4 > 0$ $\qquad \emptyset$

f) $2x^2 - 20x \le -50$ $\qquad X = 5$

$2(x^2 - 10x + 25)$

$2(x-5)^2 = 0$

g) $x^2 + 6x + 4 \geq 0$ $\quad x \in (-3+\sqrt{5}, \infty)$

h) $x^3 + x^2 - x < 1$ $\quad x \in (-\infty, -1) \cup (-1, 1)$

i) $\dfrac{4}{x-3} \leq \dfrac{3}{x+5}$ $\quad x \in (-\infty, -29] \cup (-5, 3)$

j) $\dfrac{x(x+2)^3(x-5)^4}{(x-3)^2 x} \geq 0$ $\quad x \in [-2, 0) \cup (0, 3) \cup (3, \infty)$

4. Find the domain of each function.

a) $f(x) = \sqrt{\dfrac{2x-10}{3x+12}}$

$x \in (-\infty, -4) \cup [5, \infty)$

b) $g(x) = \sqrt{3x^3 - 24x}$

$x \in [-2\sqrt{2}, 0] \cup [2\sqrt{2}, \infty)$