Answer on Question #74730- Math – Calculus

1) $g(t) = \frac{t}{2}t + 6$	or	$g(t) = \frac{t}{2t} + 6$
i) $g(0) = 0 + 6 = 6$ ii) $g(-3) = \frac{-3}{2}(-3) + 6 = \frac{9}{2} + 6 = \frac{21}{2}$ iii) $g(10) = \frac{10}{2}(10) + 6 = 50 + 6 = 56$ iv) $g(x^2) = \frac{x^2}{2}(x^2) + 6 = \frac{x^4}{2} + 6$ v) $g(t+h) = \frac{t+h}{2}(t+h) + 6 =$ $= \frac{(t+h)^2}{2} + 6$ vi) $g(t^2 - 3t + 1) =$ $= \frac{t^2 - 3t + 1}{2}(t^2 - 3t + 1) + 6 =$ $= \frac{(t^2 - 3t + 1)^2}{2} + 6 =$ $= \frac{t^4 - 3t^3 + t^2 - 3t^3 + 9t^2 - 3t + t^2 - 3t + 1 + 12}{2}$ $= \frac{t^4 - 6t^3 + 11t^2 - 6t + 13}{2}$		i) $g(0)$ ∅ ii) $g(-3) = \frac{1}{2} + 6 = \frac{13}{2}$ iii) $g(10) = \frac{1}{2} + 6 = \frac{13}{2}$ iv) $g(x^2) = \frac{1}{2} + 6 = \frac{13}{2}$ v) $g(t+h) = \frac{1}{2} + 6 = \frac{13}{2}$ vi) $g(t^2 - 3t + 1) = \frac{1}{2} + 6 = \frac{13}{2}$

$$R(x) = \sqrt{3} + x - \frac{4}{x} + 1$$

i) $R(0)$ ∅

ii) $R(6) = \sqrt{3} + 6 - \frac{4}{6} + 1 = \sqrt{3} + 7 - \frac{2}{3} = \frac{3\sqrt{3} + 19}{3}$

iii) $R(-9) = \sqrt{3} - 9 + \frac{4}{9} + 1 = \sqrt{3} - 8 + \frac{4}{9} = \frac{9\sqrt{3} - 68}{9}$

iv) $R(x+1) = \sqrt{3} + x + 1 - \frac{4}{x+1} + 1 = \sqrt{3} + x - \frac{4}{x+1} + 2$

v) $R(4x-3) = \sqrt{3} + 4x - 3 - \frac{4}{4x-3} + 1 = \sqrt{3} + 4x - \frac{4}{4x-3} - 2$

vi) $R\left(\frac{1}{x} - 1\right) = \sqrt{3} + \frac{1}{x} - 1 - \frac{4}{\frac{1}{x} - 1} + 1 = \sqrt{3} + \frac{1}{x} - 1 - \frac{4x}{1-x} + 1 = \sqrt{3} + \frac{1}{x} - \frac{4x}{1-x}$

$$= \frac{\sqrt{3}x - \sqrt{3}x^2 + 1 - x - 4x^2}{x(1-x)} = \frac{-\sqrt{3}x + \sqrt{3}x^2 - 1 + x + 4x^2}{x(x-1)} = \frac{(\sqrt{3}+4)x^2 + (1-\sqrt{3})x - 1}{x(x-1)}$$