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Question Number: **1**

$$1a) x^2 = 4x$$

$$x^2 - 4x = 0$$

$$x(x-4) = 0$$

$$\therefore x = 0 \quad \text{or} \quad x = 4 \quad \text{---}$$

$$b) \frac{1}{\sqrt{5}-2} \times \frac{\sqrt{5}+2}{\sqrt{5}+2} = \frac{\sqrt{5}+2}{5-4}$$

$$= 2 + \sqrt{5}$$

$$\therefore a = 2 \quad \text{and} \quad b = 1 \quad \text{---}$$

$$c) (-1, 2) \quad r = 5$$

$$\therefore \text{Eqn: } (x+1)^2 + (y-2)^2 = 25 \quad \text{---}$$

$$d) |2x+3| = 9$$

$$2x+3 = 9 \quad \text{or} \quad -2x-3 = 9$$

$$2x = 6 \quad \quad \quad -2x = 12$$

$$x = 3 \quad \quad \quad x = -6$$

$$\therefore x = 3 \quad \text{or} \quad x = -6 \quad \text{---}$$

$$e) \frac{d}{dx} (x^2 \tan x) = 2x \tan x + x^2 (\sec^2 x)$$

$$= 2x \tan x + x^2 \sec^2 x$$

$$= x(2 \tan x + x \sec^2 x) \quad \text{---}$$

$$f) 1 - \frac{1}{3} + \frac{1}{9} - \frac{1}{27} + \dots$$

$$r = -\frac{1}{3} < 1$$

\therefore SN exists

$$SN = \frac{a}{1-r}$$

$$= \frac{(1)}{1 - (-\frac{1}{3})}$$

$$= \frac{3}{4}$$

$$g) f(x) = \sqrt{x-8}$$

$x \geq 8$ is req'd domain ---

