

B.166 Resolução

$$a) \log_4 (3x+2) = \log_4 (2x+5) \rightarrow 3x+2 = 2x+5 \rightarrow$$

$$3x - 2x = 5 - 2 \rightarrow x = 3$$

$$3x+2 > 0$$

$$2x+5 > 0$$

$$3x > -2$$

$$2x > -5$$

$$x > -2/3$$

$$x > -5/2$$

$$S = \{3\}$$

$$b) \log_3 (5x-6) = \log_3 (3x-5) \rightarrow 5x-6 = 3x-5 \rightarrow 2x=1 \rightarrow x=1/2$$

$$5x-6 > 0$$

$$5x > 6$$

$$x > 6/5$$

$$\frac{6}{5} \quad \frac{5}{10} \quad 1,2$$

$$S = \emptyset$$

$$c) \log_2 (5x^2 - 14x + 1) = \log_2 (4x^2 - 4x - 20) \rightarrow$$

$$5x^2 - 14x + 1 = 4x^2 - 4x - 20 \rightarrow x^2 - 10x + 21 = 0 \rightarrow \Delta = (-10)^2 - 4 \cdot 1 \cdot 21$$

$$\Delta = 100 - 84 \rightarrow \Delta = 16 \rightarrow x = \frac{10 \pm 4}{2}$$

$$x_1 = 7, x_2 = 3$$

$$5 \cdot 7^2 - 14 \cdot 7 + 1 = 4$$

$$5 \cdot 49 - 98 + 1 \rightarrow 49$$

$$245 - 97 > 0$$

$$245$$

[OK]

$$5 \cdot 3^2 - 14 \cdot 3 + 1$$

$$5 \cdot 9 - 14 \cdot 3 + 1$$

$$45 - 42 + 1$$

$$4 > 0$$

[OK]

$$S = \{3, 7\}$$