B.65 Resolução

$$25^{\sqrt{x}} - 124 \cdot 5^{\sqrt{x}} = 125 \iff \left(5^2\right)^{\sqrt{x}} - 124 \cdot 5^{\sqrt{x}} = 5^3 \iff$$

$$\left(5^{\sqrt{x}}\right)^2 - 124 \cdot 5^{\sqrt{x}} = 5^3, \quad \text{se } 5^{\sqrt{x}} = K, \text{ então } K^2 - 124K = 125$$

$$\iff \Delta = (-124)^2 - 4 \cdot 1 \cdot (-125)$$

$$\Delta = 15376 + 500 \qquad K_1 = \frac{124 + 126}{2} = \frac{250}{2} = 125$$

$$\Delta = 15876$$

$$K = + \frac{124 \pm \sqrt{15876}}{2} \qquad K_2 = \frac{124 - 126}{2} = \frac{-2}{2} = -1$$

$$5^{\sqrt{x}} = 125 \qquad \qquad \bcancel{5^{\sqrt{x}} = -1}$$

$$5^{\sqrt{x}} = 5^3$$

$$\sqrt{x} = 3$$

$$x = 9 \qquad \qquad \therefore S = \{9\}$$

B.75 Resolução:

$$\left(x^2 - x + 1\right)^{\left(2x^2 - 3x - 2\right)} = 1 \iff$$

$$\bcancel{\left(x^2 - x + 1\right)}^{\left(2x^2 - 3x - 2\right)} = \bcancel{\left(x^2 - x + 1\right)}^0$$

$$2x^2 - 3x - 2 = 0 \qquad x = \frac{3 \pm \sqrt{25}}{2 \cdot 2} \qquad \begin{array}{l} x_1 = \frac{3+5}{4} = 2 \\[6pt] x_2 = \frac{3-5}{4} = \frac{-2}{4} \end{array}$$

$$\Delta = (-3)^2 - 4 \cdot 2 \cdot (-2)$$

$$\Delta = 9 + 16$$

$$\Delta = 25$$

$$S = \left\{ 0, 1, 2, -\frac{1}{2} \right\} \qquad -\frac{1}{2}$$

$$\left(0^2 - 0 + 1\right) \qquad \left(1^2 - 1 + 1\right)$$

$$1 = 1 \qquad 1 = 1$$