① $8^{2x+3} = 8^2$

$2x+3 = 2$

$x = -\frac{1}{2}$

② $5^{4-7x} = 5^3$

$4-7x = 3$

$7x = 1$

$x = \frac{1}{7}$

③ $\left(\frac{1}{4}\right)^{10x} = 64$

$4^{-10x} = 4^3$

$-10x = 3$

$x = -0,3$

④ $(0,2)^{3x^2-2x-1} = 1$

$(0,2)^{3x^2-2x-1} = 0,2^0$

$3x^2 - 2x - 1 = 0$

$D = 4 + 4 \cdot 3 = 16$

$x_1 = \frac{2-4}{2 \cdot 3} = -\frac{1}{3}$

$x_2 = \frac{2+4}{6} = 1$

⑤ $4^{x^2+2} + 4^{x+1} = 80$

$4^x / 4^2 + 4^1 / = 80$

$4^x \cdot 20 = 80$

$4^x = 4^1$

$x = 1.$

⑥ $3 \cdot 3^{2x} + 8 \cdot 3^x - 3 = 0$

$3^x = y$ – замена

$3y^2 + 8y - 3 = 0$

$D = 64 + 4 \cdot 9 = 100$

$y_1 = \frac{-8-10}{2 \cdot 3} = -3$

$y_2 = \frac{-8+10}{6} = \frac{1}{3}$

1. $3^x = -3$ – такой x не существует.

2. $3^x = \frac{1}{3}$

$3^x = 3^{-1}$

$x = -1$

Ответ: $x = -1$