

$$\textcircled{6} \quad 6^{2x+1} = 5^{4x-5}$$

take ln of both sides!

$$\ln(6^{2x+1}) = \ln(5^{4x-5})$$

power down!

$$(2x+1)\ln 6 = (4x-5)\ln 5$$

Distribute!

$$\cancel{2x \ln 6} + 1 \ln 6 = \cancel{4x \ln 5} - \cancel{5 \ln 5}$$

$$-2x \ln 6 + 5 \ln 5 \quad -2x \ln 6 + 5 \ln 5$$

Get x onto same side!

$$1 \ln 6 + 5 \ln 5 = 4x \ln 5 - 2x \ln 6$$

Factor out x!

$$1 \ln 6 + 5 \ln 5 = x(4 \ln 5 - 2 \ln 6)$$

Divide by ()!

$$\boxed{\frac{1 \ln 6 + 5 \ln 5}{4 \ln 5 - 2 \ln 6} = x}$$

$$\{3.447 \approx x\}$$

ET - Solving Log Eqns

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Solve: $\textcircled{1} \log_4(2x+10) = 3$

$\textcircled{2} \log_4(x+4) + \log_4(x+64) = 4$