

January 19<sup>th</sup>

$$9^{4x+2} - 9^{4x} = 2160$$

Factorising the LHS gives

$$9^{4x} (9^2 - 1) = 2160$$

$$\text{Hence } 9^{4x} \times 80 = 2160$$

$$\text{Therefore } 9^{4x} = 27$$

$$\text{Since } 9^{3/2} = 27$$

$$\text{Then } 4x = 3/2$$

$$\text{So } \mathbf{x = 3/8}$$