1. Write the equation of tangent line to function:

$$y(x) = 5 \cdot \sin\left(e^{2x} + \frac{\pi}{2}\right) \quad \text{at } x_0 = \frac{1}{2}$$

Tangent line equation is:

$$f(x) = y(x_0) + y'(x_0)(x - x_0)$$

1. $y(x_0) = 5 \cdot \sin\left(e^{2 \cdot \frac{1}{2}} + \frac{\pi}{2}\right) = \left| \sin\left(\alpha + \frac{\pi}{2}\right) = \cos\alpha \right| = 5 \cdot \cos(e)$

2. $y'(x) = 5 \cdot \cos\left(e^{2x} + \frac{\pi}{2}\right) \cdot e^{2x} \cdot 2 = 10 \cdot e^{2x} \cdot \cos\left(e^{2x} + \frac{\pi}{2}\right) =$

$$= \left| \cos\left(\alpha + \frac{\pi}{2}\right) = -\sin(\alpha) \right| = -10 e^{2x} \sin\left(e^{2x}\right)$$

$$y'(x_0) = -10 \cdot e^{2 \cdot \frac{1}{2}} \cdot \sin\left(e^{2 \cdot \frac{1}{2}}\right) = -10 \cdot e \cdot \sin(e)$$

3. $f(x) = 5 \cdot \cos(e) + \left(-10 \cdot e \sin(e)\right)\left(x - \frac{1}{2}\right) = 5 \cdot \cos(e) + 5 \cdot e \cdot \sin(e) - 10 x e \sin(e)$

Answer: $5 \cdot \cos(e) + 5 \cdot e \cdot \sin(e) - 10 \cdot x \cdot e \cdot \sin(e)$.