408.0

Q1. Polynomial

1	2
3	4
5	6
7	8

Answer: Here,

$F(x) = a_0 x + a_1 x + a_2 x^2 + a_3 x^3 + a_4 x^4 + \ldots$

$F(1) = 2 \quad F(5) = 6$

$F(3) = 4 \quad F(7) = 8$

Following polynomial satisfies those point

$$F(x) = \frac{\frac{(x-8)(x-9)(x-10)}{(-7 * -8 * -9 * -10)}}{2} + \frac{(x-8) * (x-2) * (x-10)}{* 7 * -0}$$

$F(x) =$

Q2) Taylor series e^{10x}

$$F(x) = \frac{d}{dx} e^{ax} = a e^{ax}.$$

$$F'(x) = \frac{d}{dx}(e^{10}) = 10 e^{10x}$$

$$F''(x) = 10^2 e^{10x}$$

$$F'''(x) = 10^3 e^{10x}$$

$$F(x) = \frac{F'(0)}{1!} + \frac{F''(0)}{2!} + \frac{F'''(0)}{3!} + \frac{F''''(0)}{4!} + \ldots$$

$$F(x) = 10 + \frac{10^2}{2!} + \frac{10^3}{3!} + \ldots$$