

روز یکشنبه ۱۳۰۳/۰۵/۱۸

تکلیف ۳

۱۸/۵

پنجشنبه

19

①

10

Oct.

2024

۱۴۴۶

ربیع الثانی

۶

$$\tan \frac{\pi}{4} = 1$$

$$\cos \frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\left. \begin{array}{l} \tan \frac{\pi}{4} = 1 \\ \cos \frac{\pi}{4} = \frac{\sqrt{2}}{2} \end{array} \right\} \tan^2 m + \sqrt{2} \cos m = 1 + \frac{\sqrt{2}}{2} \times \sqrt{2} = 2$$

$$g'(m) = \underbrace{f'(\text{داخل})} \times \underbrace{(\text{مشتق داخل})} = 2 \times 1 \times 2 = 4 + \frac{-\sqrt{2} \times \sqrt{2}}{2} = 3$$

$$(\tan^2 m) = 2 \tan m \sec m \quad \tan^2 m + \sqrt{2} \cos m \quad \leftarrow -1 = 3$$

$$\sqrt{2} \cos m = 3 f'(2) \rightarrow f'(2) = \frac{\sqrt{2}}{3}$$

②

$$g(m) = \frac{2}{2 - \cos m} \rightarrow g\left(\frac{7\pi}{6}\right) = \frac{2}{19 + 18\sqrt{3}}$$

$$f(m) = \frac{1 + \cos^3 m}{2 - \cos^3 m} \rightarrow f'\left(\frac{7\pi}{6}\right) = \frac{2\sqrt{3} - \frac{9}{16} - \frac{11\sqrt{3}}{36}}{\frac{129}{16}}$$

(جواب پانزدهم)

11

Oct.

2024

۱۴۴۶

ربیع الثانی

۷

$$f'(m) \rightarrow \lim_{m \rightarrow \frac{\pi}{4}^+} \frac{(2m-3)\sqrt{a}m-0}{m - \frac{\pi}{4}} = 2\sqrt{a}m = 2\sqrt{3}a$$

$$\lim_{m \rightarrow \frac{\pi}{4}^-} \frac{-(2m-3)\sqrt{a}m-0}{m - \frac{\pi}{4}} = -2\sqrt{a}m = -2\sqrt{3}a$$

$$2\sqrt{3}a - (-2\sqrt{3}a) = 2\sqrt{6} \rightarrow a = \frac{1}{4}$$

③

$$f'(x) = -a \quad \left\{ \begin{array}{l} f(x) + f'(x) = -1 \\ f(x) = 2^x a \end{array} \right. \Rightarrow 2^x a - a = -1$$

$$f'(x) = -\frac{3}{5}$$

$$a = \frac{3}{5}$$

روز بزرگداشت حافظ

④

$$y = \frac{n+a}{v} = a \frac{n-1}{n+1}$$

المعادلة
 $\Delta = 0$

$$n_m^2 + (14-7a)n + 12 = 0$$

$$(14-7a)^2 - 4 \times 1 \times 12 = 0$$

✓

$$7a = 14$$

$$14-7a = 14$$

$$a = \frac{14}{7} = 2$$

✓

$$f(x) = 0 \quad f'(x) = 0$$

$$1a + 7a - b = 0$$

$$14 + a = 0$$

$$a = -14$$

$$b = -14$$

$$\Rightarrow -14 - (-14) = 0$$

$$f(m) = \sin^h(m)$$

$$\lim_{m \rightarrow \infty} \frac{f(m) f'(m)}{(1 - \cos m)^m} = \frac{1}{\sqrt{2}}$$

$$\frac{\sin m \sim m}{\cos m \sim \frac{m}{r}} \rightarrow (ym) \times m^r \times \frac{1}{r}$$

$$m^r = m^r \rightarrow y_m = r$$

$$h = r \quad m = \frac{r}{h}$$

$$ym + h = r + r = 2r$$

$$y = \frac{\sqrt{m+1}}{\sqrt{m-1}} \Rightarrow \sqrt{m} y - y = \sqrt{m+1} \rightarrow \sqrt{m} (y-1) = y+1$$

$$\left(\frac{m+1}{m-1}\right)^y = f^{-1}(m) \leftarrow m = \left(\frac{y+1}{y-1}\right)^y$$

$$f^{-1}(m) = y \left(\frac{m+1}{m-1}\right) \left(\frac{(m-1)^y (m+1)}{(m-1)^y}\right) \Rightarrow f^{-1}(y) = y^y (y+1)^{y-1}$$

ولادت حضرت امام حسن عسکری علیہ السلام (۲۳۲ هـ.ق)

$$-14$$

$$y = \sin^n \cos^n$$

$$\frac{f(\frac{\pi}{4}) - f(\frac{\pi}{2})}{\frac{\pi}{4} - \frac{\pi}{2}} = \frac{-1 - 0}{\frac{\pi}{4}} = -\frac{4}{\pi}$$

$$y = \sin^n - \cos^n$$

$$\frac{f(\frac{\pi}{4}) - f(\frac{\pi}{2})}{\frac{\pi}{4} - \frac{\pi}{2}} = \frac{1 - 0}{\frac{\pi}{4}} = \frac{4}{\pi}$$

$$\Rightarrow \frac{-\frac{4}{\pi}}{\frac{4}{\pi}} = -1 \rightarrow \text{جواب} \quad \textcircled{2}$$

$$f(0) \rightarrow (1)^n (1) = 1$$

$$\frac{1 + \lambda a - \lambda}{+1} = -1$$

$$f(1) \rightarrow (1)^n (-a+1) = -\lambda a + \lambda$$

$$\lambda a = -1 \rightarrow a = -\frac{1}{\lambda}$$

$$f(n) = (n^n + 1)^n \left(-\frac{n}{n} + 1\right)$$

$$\rightarrow f'(n) = n(n^n + 1)^n \left(-\frac{n}{n} + 1\right) + \left(-\frac{1}{n}\right)(n^n + 1)^n$$

$$= -1 + \frac{1}{n} = \frac{1-n}{n}$$

$$+ \frac{1}{n} \times \lambda = \frac{1-n}{n} + \frac{1}{n} \times \lambda$$

$$= \frac{1-n+\lambda}{n}$$

$$f'\left(\frac{\sqrt{r}}{r}\right) - rg'\left(\frac{\sqrt{r}}{r}\right) = (f - rg)'\left(\frac{\sqrt{r}}{r}\right)$$

$$\rightarrow (f - rg)' = \left(\frac{1 + \cos^2 u}{r - \cos^2 u} - \frac{r}{r - \cos^2 u} \right) = \left(\frac{(\cos u + 1)(\cos^2 u - r \cos u + r)}{(r - \cos^2 u)(r + \cos^2 u)} - \frac{r}{r - \cos^2 u} \right) =$$

$$\left(\frac{\cos(\cos u - r)}{-(\cos u - r)} \right)' = -(\cos u)' = \sin u \xrightarrow{u = \frac{\sqrt{r}}{r}} \sin\left(\frac{\sqrt{r}}{r}\right) = \frac{-1}{r}$$