

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۲۲۳... کلاس: ۲۲/۱/۲۰۲۰

$$g(x) = \sqrt{(a \cos x + \sqrt{2} \cos x)} \Rightarrow g\left(\frac{\pi}{4}\right) = f(2) \Rightarrow g'\left(\frac{\pi}{4}\right) = f'(2) = \sqrt{2}$$

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$$h(x) = f(x) - 2g(x) = \frac{\cos^2 x - 2 \cos x + 2 - 2}{2 - \cos x} = \frac{\cos x (\cos x - 2)}{-(\cos x - 2)} = -\cos x \Rightarrow h'\left(\frac{\pi}{4}\right) = -\sin\left(\frac{\pi}{4}\right) = -\frac{1}{\sqrt{2}}$$

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$$f_1\left(\frac{\pi}{4}\right) = (\pi - 2)(\sqrt{2}) = \pi\sqrt{2} + \frac{2}{\sqrt{2}} = \pi\sqrt{2} + \sqrt{2} = 2\sqrt{2} \Rightarrow f_1\left(\frac{\pi}{4}\right) = -\pi\sqrt{2} + \sqrt{2} = -\sqrt{2} \Rightarrow 2\sqrt{2} + 2\sqrt{2} = 4\sqrt{2} \Rightarrow \boxed{4\sqrt{2}}$$

$$y = 2 - ax \quad g(x) = 2 - ax \quad f(x) = g(x), \quad f'(x) = g'(x) = -a$$

$$g(x) = 2 - ax \Rightarrow 2 - ax - a = -1 \Rightarrow a = \frac{3}{10} \Rightarrow f'(x) = -a = -\frac{3}{10}$$

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$$y = \frac{x+2}{x} \quad \frac{(ax-1)}{x+1} = \frac{(x+2)}{x} \quad 4ax - 1 = x^2 + 4x + 2$$

$$\Rightarrow f(x) = \frac{x-1}{x+1}$$

$$14 - 4a = (2\sqrt{2})(2\sqrt{2}) \quad 14 - 4a = -12 \Rightarrow -4a = -26 \Rightarrow a = \frac{13}{2}$$

$$14 - 4a = 12 \Rightarrow a = \frac{1}{2}$$

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$$f(x) = x^p + ax - b \Rightarrow f'(x) = px + a \Rightarrow f'(x) = p \Rightarrow a = -4$$

$$\Rightarrow f(x) = x^p + ax - b \Rightarrow f(x) = 0 \Rightarrow 1 - 12 - b = 0 \Rightarrow b = -11$$

$$b - a = -11 + 4 = -7$$

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$$f(x) = \frac{1}{n} \sin x^{n-1} (x^p) \cos(x^p) \cdot px = \lim_{x \rightarrow 0} \frac{f(x) \cdot f'(x)}{1 - \cos(x^p)} = \frac{n(\sin^{p(n-1)}(x^p)) \cos(x^p) \cdot px}{(1 - \cos(x^p))^m}$$

$$\lim_{x \rightarrow 0} \frac{x^{pm} \cdot \frac{1}{p} x^{p-1}}{x^{pm} \cdot \frac{1}{p} x^{p-1}} = \frac{1}{p} \cdot \frac{1}{p} = \frac{1}{p^2}$$

$$n = 2 \Rightarrow m = 1 \Rightarrow pm + n = 9$$

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$$f(x) = \frac{1}{x} \Rightarrow f'(x) = -\frac{1}{x^2} \Rightarrow f'(1) = -1$$

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$$\frac{f(x-a) - f(a)}{x-a} = \frac{f(1) - f(0)}{1-0} = \frac{1(1-a) - 1}{-1} = -1 \Rightarrow 1 - 1a - 1 = -1 \Rightarrow -1a = -1 \Rightarrow a = 1$$

$$f'(x) = f'(1) = f'(x) = \frac{1}{x^2} \Rightarrow f'(1) = 1$$

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$$\frac{-\sin \frac{\pi}{2} \cos \frac{\pi}{2} + \sin \frac{\pi}{2} \cos \frac{\pi}{2}}{\frac{\pi}{2}} = \frac{1}{\frac{\pi}{2}} = \frac{2}{\pi}$$

$$\frac{\sin^2 \frac{\pi}{4} - \cos^2 \frac{\pi}{4} + \sin^2 \frac{\pi}{4} + \cos^2 \frac{\pi}{4}}{\frac{\pi}{2}} = \frac{1 - 1}{\frac{\pi}{2}} = 0$$

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