

سلسلة داعمة حول الاشتقاق

مشتقة الدوال المثلثية

احسب $f'(x)$ في الحالات التالية

$$f(x) = \sin(3x) \quad .1$$

$$f(x) = \cos(2x) \quad .2$$

$$f(x) = \tan \frac{x}{2} \quad .3$$

$$f(x) = 3\cotan(2x) \quad .4$$

$$f(x) = \sec(x) \quad .5$$

$$f(x) = \cosec(x) \quad .6$$

$$f(x) = 3\cos(x^2) \quad .7$$

$$f(x) = \sin(2x + \pi) \quad .8$$

$$f(x) = \sin \frac{x-1}{x} \quad .9$$

$$f(x) = \sin^3(2x) \quad .10$$

$$f(x) = \cos^2(3x) \quad .11$$

$$f(x) = \cotan^2 \frac{x}{3} \quad .12$$

$$f(x) = x\tan^2 x \quad .13$$

$$f(x) = \frac{\tan(1-x)}{2} \quad .14$$

$$f(x) = (1 + \sin(2x))^2 \quad .15$$

$$f(x) = \cos(x) - \sin(3x) \quad .16$$

$$f(x) = \sin \frac{x}{2} - \cos \frac{x}{3} \quad .17$$

$$f(x) = \sin(2x) - 2\sin(x) \quad .18$$

$$f(x) = \sin(2x) - \sin(4x) \quad .19$$

$$f(x) = \frac{\cos(x)}{\sin(3x)} + 2\cotan(x) \quad .20$$

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الحلول:

$$f'(x) = 3\cos(3x) \quad .1$$

$$f'(x) = -2\sin(2x) \quad .2$$

$$f'(x) = \frac{1}{2\cos^2\frac{x}{2}} \quad .3$$

$$f'(x) = -\frac{6}{\sin^2(2x)} \quad .4$$

$$f'(x) = \frac{\sin(x)}{\cos^2(x)} \quad .5$$

$$f'(x) = -\frac{\cos(x)}{\sin^2(x)} \quad .6$$

$$f'(x) = -6x\sin(x^2) \quad .7$$

$$f'(x) = 2\cos(2x + \pi) \quad .8$$

$$f'(x) = \frac{1}{x^2} \cos \frac{x-1}{x} \quad .9$$

$$f'(x) = 6\cos(2x)\sin^2(2x) \quad .10$$

$$f'(x) = -6\sin(3x)\cos(3x) \quad .11$$

$$f'(x) = -\frac{2\cos\frac{x}{3}}{3\sin^3\frac{x}{3}} \quad .12$$

$$f'(x) = \tan^2(x) + 2x\tan(x)\sec^2(x) \quad .13$$

$$f'(x) = -\frac{1}{2\cos^2(1-x)} \quad .14$$

$$f'(x) = 4\cos(2x)(\sin(2x) + 1) \quad .15$$

$$f'(x) = -\sin(x) - 3\cos(3x) \quad .16$$

$$f'(x) = \frac{1}{2}\cos\frac{x}{2} + \frac{1}{3}\sin\frac{x}{3} \quad .17$$

$$f'(x) = 2\cos(2x) - 2\cos(x) \quad .18$$

$$f'(x) = 2\cos(2x) - 4\cos(4x) \quad .19$$

$$f'(x) = -\frac{\sin(x)\sin(3x)-3\cos(x)\cos(3x)}{\sin^2(3x)} - \frac{2}{\sin^2(x)} \quad .20$$