Dérivées - Fonctions trigonométriques

Chercher les fonctions dérivées des fonctions numériques f définies dans $\mathbb{R}$ par :

$f(x) = sinx + 2cosx$

$f(x) = sinxcosx$

$f(x) = (sinx + 2cosx)cosx$

$f(x) = \dfrac{sinx + 1}{sinx - 1}$

$f(x) = \dfrac{cosx + 2}{cosx + 3}$

$f(x) = sin\dfrac{x}{2} + 3cos4x$

$f(x) = 6cos\dfrac{x}{3} - 4sin\dfrac{3x}{2}$

$f(x) = 2cosx - cos2x$

$f(x) = sin^2\dfrac{x}{2} + cos^3 4x$

$f(x) = \dfrac{sin3x}{cos5x}$

$f(x) = 1 + \dfrac{sin^3 x}{cosx}$

$f(x) = sin(x - \dfrac{\pi}{4}) + cos(x - \dfrac{\pi}{3})$

$f(x) = cos(2x - \dfrac{\pi}{3}) + sin(3x + \dfrac{\pi}{4})$

$f(x) = 2sin^2 x + 5sinx - 3$

$f(x) = 2cos(3x + \dfrac{\pi}{4}) - 3sin4x$

$f(x) = 4sin^3 x - 3sinx + 2$

$f(x) = 3sin^4 x + cos^4 x - 1$

$f(x) = sin\dfrac{x}{2}sin\dfrac{x}{3}$

$f(x) = 4cos\dfrac{x}{2}cos\dfrac{3x}{2}$

$f(x) = \dfrac{sinx}{cosx + sinx}$

$f(x) = \dfrac{sinx}{cos2x}$

$f(x) = \dfrac{sin2x}{cos^2 2x}$

$f(x) = \dfrac{1}{(\sqrt{2}cosx + 1)^2}$

$f(x) = \dfrac{2}{sin2x} - \dfrac{1}{sinx}$

$f(x) = \sqrt{cos2x + 3sin^2 x}$

$f(x) = x - sinxcosx$

$f(x) = cosx(sin^2 x + 2)$

$f(x) = sinxcosx(2cos^2 x + 3) + 3x$

$f(x) = \dfrac{cosx}{sin^3 x} - 2cotanx$

$f(x) = \dfrac{sinx - xcosx}{cosx + xsinx}$

$f(x) = \dfrac{tanx}{a + (ax + b)tanx}$

$f(x) = \dfrac{cosx + xsinx}{sinx - xcosx}$

$f(x) = 2xcosx + (x^2 - 2)sinx$

☞ **ici** les réponses

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Réponses :

$$f'(x) = (sinx + 2cosx)' = cosx - 2sinx$$
$$f'(x) = (sinxcosx)' = cos^2x - sin^2x = cos2x$$
$$f'(x) = ((sinx + 2cosx)cosx)' = cos^2x - sin^2x - 4sinxcosx = cos2x - 2sin2x$$
$$f'(x) = (\frac{sinx+1}{sinx-1})' = \frac{-2cosx}{(sinx-1)^2}$$
$$f'(x) = (\frac{cosx+2}{cosx+3})' = \frac{-sinx}{(cosx+3)^2}$$
$$f'(x) = (sin\frac{x}{2} + 3cos4x)' = \frac{1}{2}cos\frac{x}{2} - 12sin4x$$
$$f'(x) = (6cos\frac{x}{3} - 4sin\frac{3x}{2})' = -2sin\frac{x}{3} - 6cos\frac{3x}{2}$$
$$f'(x) = (2cosx - cos2x)' = 2sinx(2cosx - 1)$$
$$f'(x) = (sin^2\frac{x}{2} + cos^3 4x)' = sin\frac{x}{2}cos\frac{x}{2} - 12cos^2 4xsin4x = \frac{1}{2}sinx + 6sin8xcos4x$$
$$f'(x) = (\frac{sin3x}{cos5x})' = \frac{3cos3xcos5x + 5sin5xsin3x}{cos^2 5x}$$
$$f'(x) = (1 + \frac{sin^3x}{cosx})' = \frac{sin^2x(3cos^2x + sin^2x)}{cos^2x} = \frac{sin^2x(1 + 2sin^2x)}{cos^2x}$$
$$f'(x) = (sin(x - \frac{\pi}{4}) + cos(x - \frac{\pi}{3}))' = cos(x - \frac{\pi}{4}) - sin(x - \frac{\pi}{3})$$
$$f'(x) = (cos(2x - \frac{\pi}{3}) + sin(3x + \frac{\pi}{4}))' = -2sin(2x - \frac{\pi}{3}) + 3cos(3x + \frac{\pi}{4})$$
$$f'(x) = (2sin^2x + 5sinx - 3)' = cosx(4sinx + 5)$$
$$f'(x) = (2cos(3x + \frac{\pi}{4}) - 3sin4x)' = -6sin(3x + \frac{\pi}{4}) - 12cos4x$$
$$f'(x) = (4sin^3x - 3sinx + 2)' = 3cosx(4sin^2x - 1)$$
$$f'(x) = (3sin^4x + cos^4x - 1)' = 4cosxsinx(4sin^2x - 1)$$

☞ **Retour**

Réponses :

$$f'(x) = (sin\frac{x}{2}sin\frac{x}{3})' = \frac{1}{2}cos\frac{x}{2}sin\frac{x}{3} + \frac{1}{3}sin\frac{x}{2}cos\frac{x}{3}$$
$$f'(x) = (4cos\frac{x}{2}cos\frac{3x}{2})' = -2[sin\frac{x}{2}cos\frac{3x}{2} + 3cos\frac{x}{2}sin\frac{3x}{2}]$$
$$f'(x) = (\frac{sinx}{cosx + sinx})' = \frac{1}{(sinx + cosx)^2}$$
$$f'(x) = (\frac{sinx}{cos2x})' = \frac{cosx(cos^2x + 3sin^2x)}{cos^2 2x}$$
$$f'(x) = (\frac{sin2x}{cos^2 2x})' = \frac{2cos2x(cos^2 2x + 2sin^2 2x)}{cos^4 2x}$$
$$f'(x) = (\frac{1}{(\sqrt{2}cosx + 1)^2})' = \frac{2\sqrt{2}sinx}{(\sqrt{2}cosx + 1)^3}$$
$$f'(x) = (\frac{2}{sin2x} - \frac{1}{sinx})' = \frac{4(cos^3x - 2cos^2x + 1)}{sin^2 2x} = \frac{(cosx - 1)(cos^2x - cosx - 1)}{sin^2xcos^2x}$$
$$f'(x) = (\sqrt{cos2x + 3sin^2x})' = \frac{sin2x}{2\sqrt{cos2x + 3sin^2x}}$$
$$f'(x) = (x - sinxcosx)' = 2sin^2x$$
$$f'(x) = (cosx(sin^2x + 2))' = -3sin^3x$$
$$f'(x) = (sinxcosx(2cos^2x + 3) + 3x)' = 8cos^4x$$
$$f'(x) = (\frac{cosx}{sin^3x} - 2cotanx)' = \frac{-3}{sin^4x}$$
$$f'(x) = (\frac{sinx - xcosx}{cosx + xsinx})' = \frac{x^2}{(cosx + xsinx)^2}$$
$$f'(x) = (\frac{tanx}{a + (ax + b)tanx})' = \frac{a}{[a + (ax + b)tanx]^2}$$
$$f'(x) = (\frac{cosx + xsinx}{sinx - xcosx})' = \frac{-x^2}{(sinx - xcosx)^2}$$
$$f'(x) = (2xcosx + (x^2 - 2)sinx)' = x^2cosx$$

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