$f := x \rightarrow 8 \cdot \cos(x)^2 - \sin(x)$

$$f := x \mapsto 8\cos(x)^2 - \sin(x) \tag{1}$$

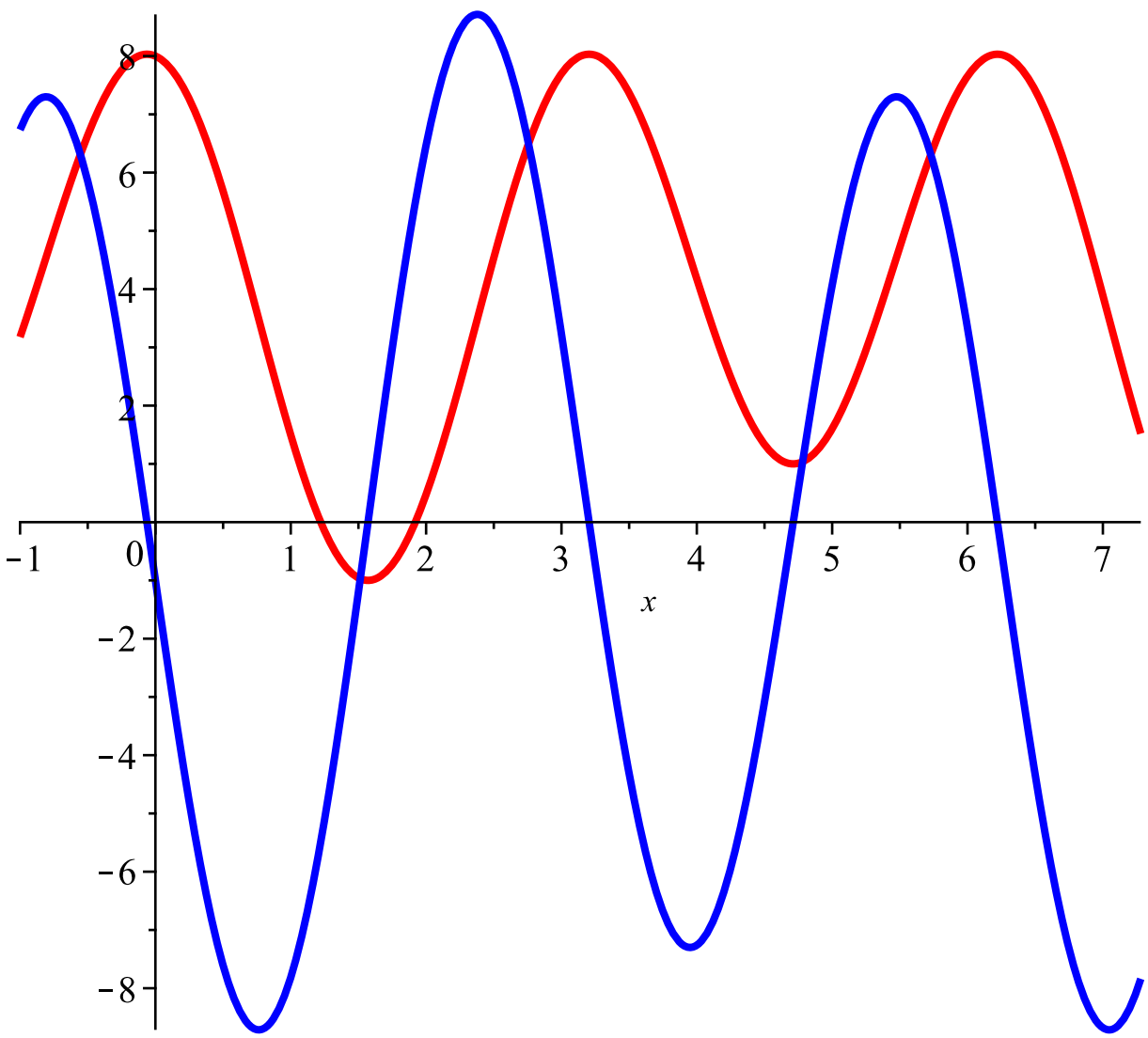
$with(plots):$
$fp := \mathrm{D}(f)$

$$fp := x \mapsto -16\cos(x)\sin(x) - \cos(x) \tag{2}$$

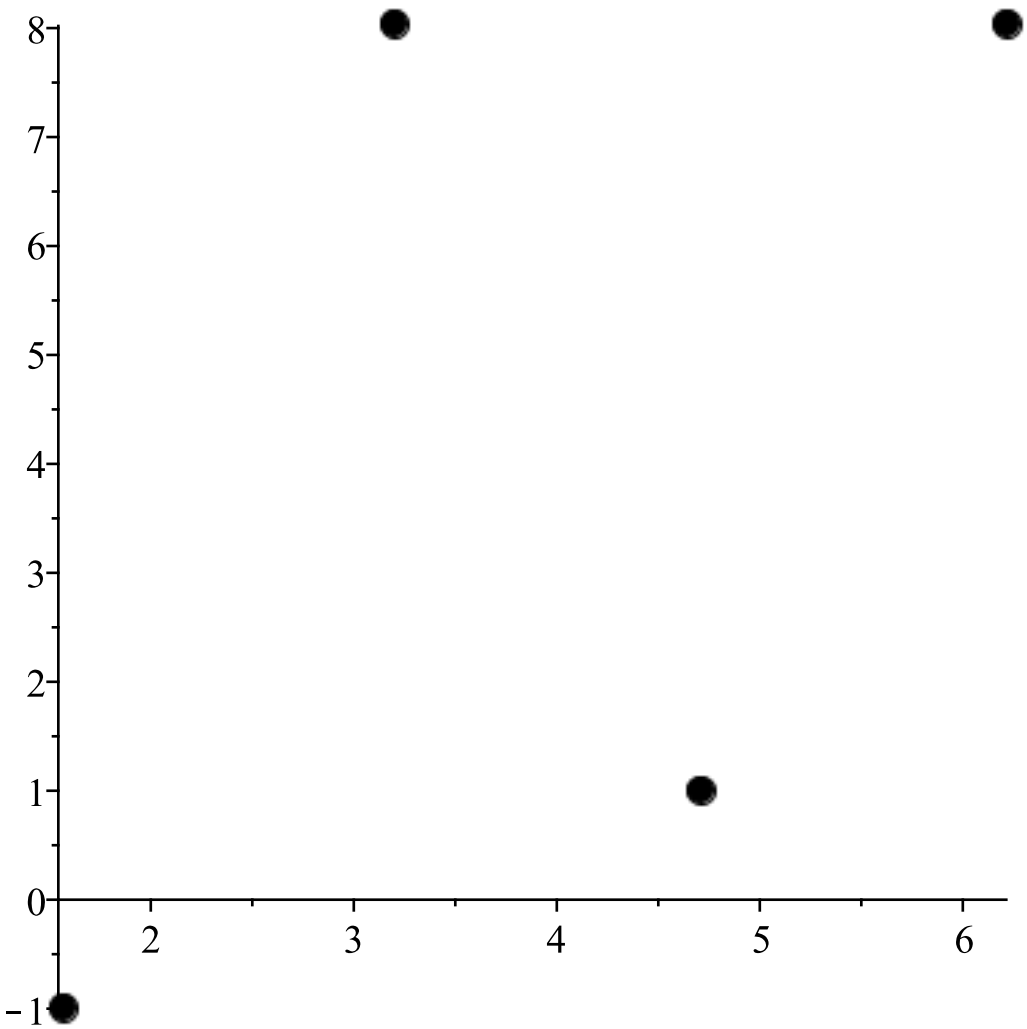
$solve(fp(x) = 0)$

$$-\arcsin\left(\frac{1}{16}\right), \frac{\pi}{2} \tag{3}$$

$myplot := plot([f(x), fp(x)], x = -1..7.28, color = [red, blue], thickness = 3)$



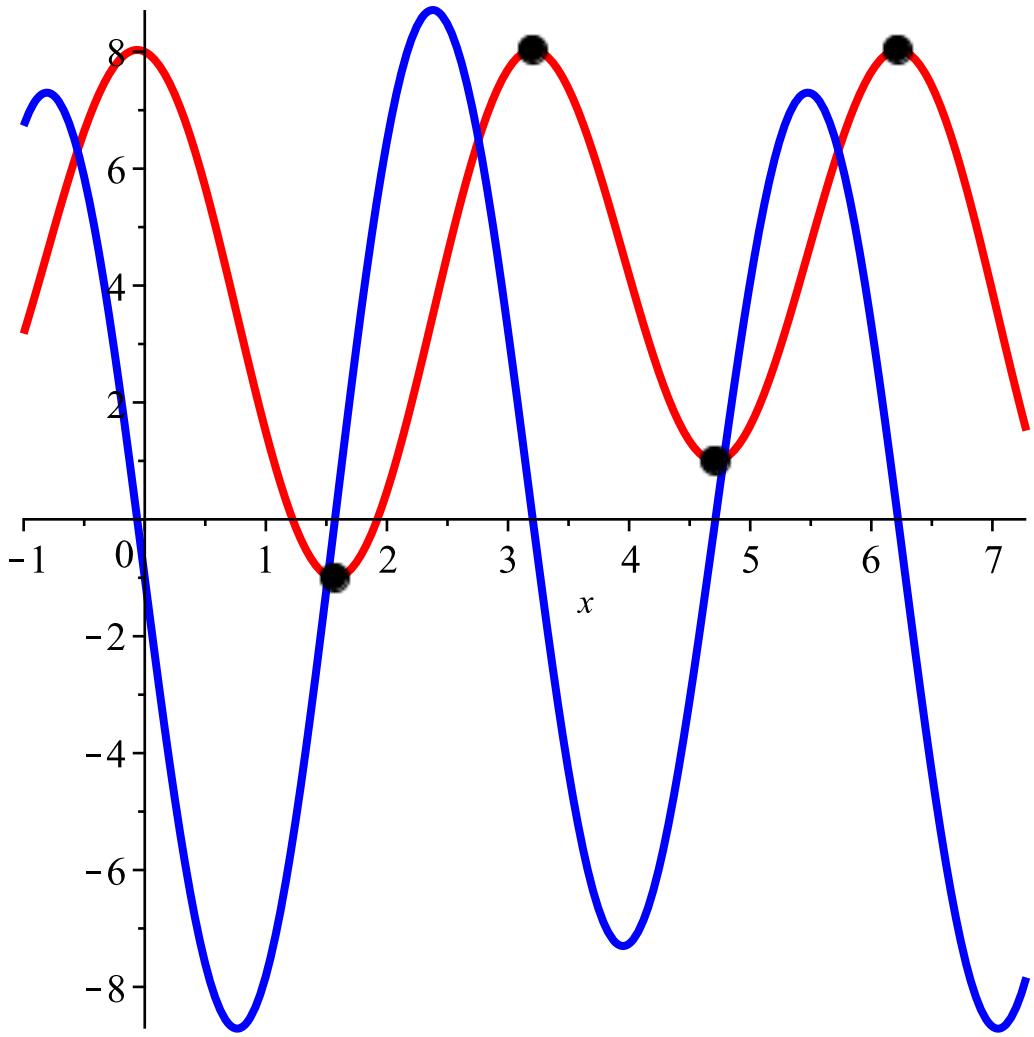
$mypoints := pointplot\left(\left[\left[\frac{\mathrm{Pi}}{2}, f\left(\frac{\mathrm{Pi}}{2}\right)\right], \left[\frac{3 \cdot \mathrm{Pi}}{2}, f\left(3 \cdot \left(\frac{\mathrm{Pi}}{2}\right)\right)\right], \left[\mathrm{Pi} + \arcsin\left(\frac{1}{16}\right), f\left(\mathrm{Pi} + \arcsin\left(\frac{1}{16}\right)\right)\right], \left[2 \cdot \mathrm{Pi} - \arcsin\left(\frac{1}{16}\right), f\left(2 \cdot \mathrm{Pi} - \arcsin\left(\frac{1}{16}\right)\right)\right]\right], symbol = solidcircle, symbolsize = 20\right)$



$$evalf\left(\left[\left[\frac{\mathrm{Pi}}{2}, f\left(\frac{\mathrm{Pi}}{2}\right)\right], \left[\frac{3\cdot\mathrm{Pi}}{2}, f\left(3\cdot\left(\frac{\mathrm{Pi}}{2}\right)\right)\right], \left[\mathrm{Pi}+\arcsin\left(\frac{1}{16}\right), f\left(\mathrm{Pi}+\arcsin\left(\frac{1}{16}\right)\right)\right], \left[2\cdot\mathrm{Pi}-\arcsin\left(\frac{1}{16}\right), f\left(2\cdot\mathrm{Pi}-\arcsin\left(\frac{1}{16}\right)\right)\right]\right]\right)$$

$$[[1.570796327, -1.], [4.712388981, 1.], [3.204133416, 8.031250000], [6.220644546, 8.031250000]] \quad \textbf{(4)}$$

$$display([myplot, mypoints])$$


8
6
4
2
-2
-4
-6
-8
-1
0
1
2
3
4
5
6
7
x