



Graph of  $g$

6. Let  $g$  be the piecewise-linear function defined on  $[-2\pi, 4\pi]$  whose graph is given above, and

$$\text{let } f(x) = g(x) - \cos\left(\frac{x}{2}\right).$$

- (a) Find  $\int_{-2\pi}^{4\pi} f(x) \, dx$ . Show the computations that lead to your answer.
  - (b) Find all  $x$ -values in the open interval  $(-2\pi, 4\pi)$  for which  $f$  has a critical point.
  - (c) Let  $h(x) = \int_0^{3x} g(t) \, dt$ . Find  $h'\left(-\frac{\pi}{3}\right)$ .
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