

Arc length problems

pg 1re

SET UP INTEGRALS THAT FINDS THE LENGTH OF THE CURVE OVER THE GIVEN INTERVAL.

①. $f(x) = x^3 - 4x$ on $[-2, 3]$

②. $f(x) = \sin(3x)$ on $[-\pi, 2\pi]$

③. $f(x) = e^x$ on $[0, 1]$

④. $f(x) = (x-2)^{2/3}$ on $[1, 10]$ (Hint: this requires 2 integrals. to find out why graph the function at [desmos.com](https://www.desmos.com).)

⑤. $f(x) = |\cos(x)|$ on $[0, \frac{3\pi}{4}]$ (Hint: this also requires 2 integrals. see [desmos.com](https://www.desmos.com) again)

One possible approach:

$$|u| = \sqrt{u^2}$$

use this  to find $f'(x)$.