

Name:

Class quiz 2

Feb 2, 2018

1) Evaluate the following integral:

$$a- \int_0^{\frac{\pi}{2}} \cos \theta \cdot \cos (\pi \sin \theta) d\theta$$

$$u = \pi \sin \theta \\ du = \pi \cos \theta d\theta$$

$$\theta = 0 \quad u = 0 \\ \theta = \frac{\pi}{2} \quad u = \pi$$

$$= \frac{1}{\pi} \int_0^{\pi} \cos(u) d\theta$$

$$= \frac{\sin(\theta)}{\pi} \Big|_0^{\pi} = 0$$

$$b- \int_1^2 (x+1)(x^2+2x)^3 dx$$

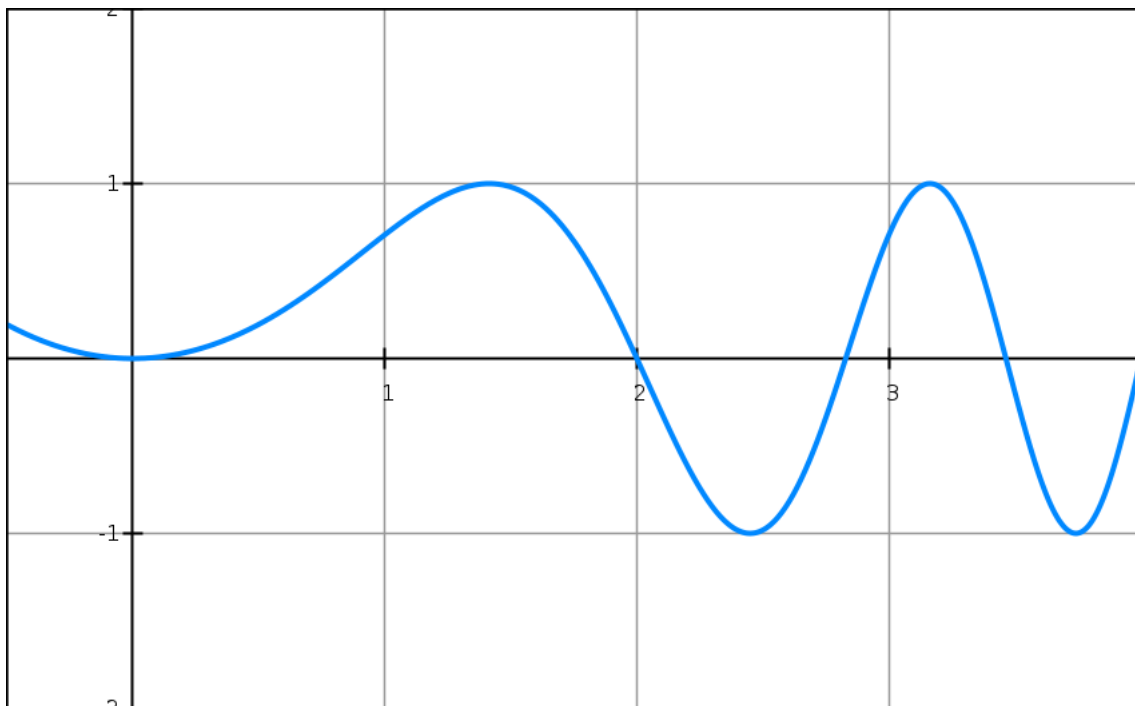
$$u = x^2 + 2x \\ du = (2x+2) dx \\ = 2(x+1) dx$$

$$x = 1 \quad u = 3 \\ x = 2 \quad u = 8$$

$$= \frac{1}{2} \int_3^8 u^3 du$$

$$= \frac{u^4}{8} \Big|_3^8 = \frac{8^4}{8} - \frac{3^4}{8}$$

II) Given the following graph of a function $f(x)$.



Define $g(x) = \int_0^x f(t)dt$ on the interval $[0,4]$.

a- At what value x does g have an absolute maximum on $[0,4]$.

at $x=2$

b- At what value x does g have an absolute minimum on $[0,4]$.

at $x=0$

c- On what interval is g increasing.

on $(0, 2)$ and $(2.8, 3.5)$