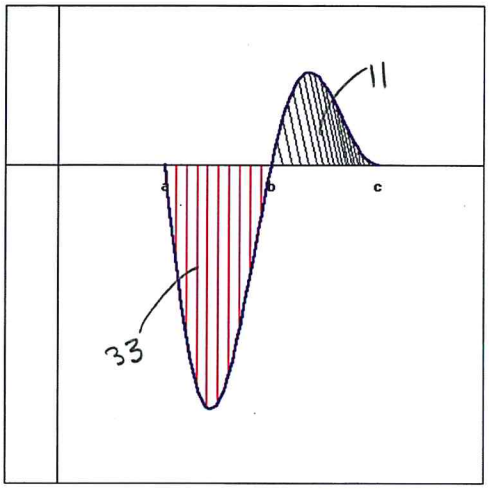
NAME: Solutions MTH 132, MSU, 11/30/2018.

Quiz 11

1. Use the following figure, which shows a graph of $f(x)$ to find each of the indicated integrals. The first area (with vertical, red shading) is 33 and the second (with oblique, black shading) is 11.



(a). $\int_a^b f(x)\,dx = -33$ (1 pt. each)

(b). $\int_b^c f(x)\,dx = 11$

(c). $\int_a^c f(x)\,dx = -33+11 = -22$

(d). $\int_a^c |f(x)|\,dx = 33+11 = 44$

2. Find the integral:

$$\int x^3 \cos(5x^4)\,dx.$$

$u = 5x^4$ (3 pts.)

$du = 20x^3\,dx$ (1 pt.)

$\frac{1}{20}du = x^3\,dx$ (1 pt.)

$$\int x^3\cos(5x^4)\,dx = \int \cos(u)\,\frac{1}{20}\,du = \frac{1}{20}\sin(u)+C$$

(1 pt.)

$$= \frac{1}{20}\sin(5x^4)+C$$ (1 pt.)