Write your name, section number (054 for 11:30, 039 for 12:30), and quiz number on the top of your quiz. (You will need a one-line calculator.)

Place your quiz face down on your desk when you are done.

QUIZ 2

Evaluate the following (round answer for (2) to 3 decimal places):

$$(1) \int 9x^2\sqrt{x^3-10}\,dx \qquad\qquad (2) \int_0^1 (t+2)e^{t^2+4t}dt$$

QUIZ 2 Solutions

1. Let $u = x^3 - 10$ (so that $du = 3x^2dx$ and hence $dx = du/(3x^2)$); then:

$$\begin{aligned}\int 9x^2\sqrt{x^3-10}\,dx = \int 9x^2\sqrt{u}\left(\frac{du}{3x^2}\right) &= \int 3\sqrt{u}\,du \\ &= \int 3u^{1/2}\,du \\ &= 2u^{3/2} + C \\ &= 2(x^3-10)^{3/2} + C\end{aligned}$$

2. Let $u = t^2+4t$ (so that $du = (2t+4)dt$ and hence $dt = du/(2t+4)$); further, since this is a definite integral, changing the bounds yields:

$$\begin{aligned} t = 1 &\implies u = (1)^2 + 4(1) = 5 \\ t = 0 &\implies u = (0)^2 + 4(0) = 0\end{aligned}$$

and so:

$$\begin{aligned}\int_0^1 (t+2)e^{t^2+4t}dt = \int_0^5 (t+2)e^u\left(\frac{du}{2t+4}\right) = \int_0^5 \frac{1}{2}e^u du &= \left[\frac{1}{2}e^u\right]_0^5 \\ &= \frac{1}{2}e^5 - \frac{1}{2} \\ &\approx 73.707\end{aligned}$$