February 2
Section 6.5
Answer Questions

Problem #11

$$\int_{-2}^{-1} e^{2x}\,dx = \left[\frac{1}{2}e^{2x}\right]_{-2}^{-1} = \frac{1}{2}e^{2(-1)} - \frac{1}{2}e^{2(-2)} = \frac{1}{2}e^{-2} - \frac{1}{2}e^{-4}$$

Know: $\int e^{ax}\,dx = \frac{1}{a}e^{ax} + C$

Problem #25
average value of f(x) = 6 on the interval [0, 10]
Answer by inspection: 6

Problem #33
average value of f(x) = x(x – 1) on [0, 2]

$$\frac{13}{2-0}\int_0^2 x(x-1)\,dx = \frac{1}{2}\int_0^2 \left(x^2 - x\right)dx = \frac{1}{2}\left[\frac{1}{3}x^3 - \frac{1}{2}x^2\right]_0^2$$

$$= \frac{1}{2}\left[\frac{1}{3}2^3 - \frac{1}{2}2^2\right] - \frac{1}{2}\left[\frac{1}{3}0^3 - \frac{1}{2}0^2\right] = \frac{1}{2}\left[\frac{8}{3} - 2\right] - \frac{1}{2}[0] = \frac{1}{2}\left[\frac{2}{3}\right] = \frac{1}{3}$$