

Here's a quick summary of things you should have down solid before we tackle any new stuff.

Write out the solutions on a separate sheet of paper, and show all your work. Do not use a calculator or computer.

Limits

1. Evaluate.

(a) $\lim_{n \rightarrow \infty} \frac{2}{8n^2 - 4n + 2}$

(c) $\lim_{x \rightarrow \infty} \frac{\sin(x)}{x^2 + 1}$

(e) $\lim_{x \rightarrow \infty} \frac{\sqrt{x}}{\ln(x)}$

(b) $\lim_{x \rightarrow 1} \frac{3}{\ln(x)}$

(d) $\lim_{x \rightarrow \infty} \frac{x^5}{e^x}$

Derivatives

2. Find $f'(x)$.

(a) $f(x) = x^3 \cos(x)$

(c) $f(x) = e^{x^3 - 5x}$

(b) $f(x) = \frac{x^{\frac{7}{2}}}{e^{4x}}$

(d) $f(x) = \frac{xe^x}{\sin(x^2 - 2x + 5)}$

Integrals

3. Evaluate.

(a) $\int \sin(7x) \, dx$

(c) $\int_{-1}^k te^{-5t^2} \, dt$

(e) $\int \frac{t - 9}{t^2 - 3t - 4} \, dt$

(b) $\int_0^4 \frac{5x}{2x^2 + 3} \, dx$

(d) $\int_0^\infty te^{-t} \, dt$

(f) $\int_0^\infty t^2 e^{-st} \, dt$ treat s like a constant

Other (old) stuff

4. Sketch a rough graph of the following polynomials.

(a) $f(x) = x(x - 5)$

(c) $f(x) = -x^2(x - 7)^3(x + 3)^4(x + 9)$

(b) $f(x) = -(x + 2)^2(x + 8)$

5. Sketch the curve given by the parametric equations.

(a) $x = \cos t, y = \sin t, 0 \leq t \leq 2\pi$

(c) $x = \cos t, y = \cos^2 t, 0 \leq t \leq 2\pi$

(b) $x = t, y = t^2, -1 \leq t \leq 1$

(d) $x = 5 - t, y = 2t - 4, 3 \leq t \leq 6$