

Way back when I was in college, a math professor suggested that I make a sample test to help me figure out what I don't know. Just pick one or two examples from each section - remember you need problems that have known answers. Put each problem on a separate page. Then mix up those pages such that the problems are in a different order than the book. Some students memorize the sections in order and draw a blank when the test problems are in a different order.

Here is some extra practice:

1. Find:

$$\frac{dy}{dx} \text{ given } y = \frac{x}{x+1}.$$

2. Using the definition of the derivative, find $f'(x)$ for $f(x) = x^2$.

3. Find $\lim_{x \rightarrow 4} (-4x^2 + 2x - 3)$.

4. Find:

$$\frac{d^2y}{dx^2} \text{ if } y = \sec x.$$

5. Find:

$$\lim_{x \rightarrow 0} \frac{\sin(3x)}{x}.$$

6. Find $\frac{dy}{dx}$ given $x^2y - xy^2 + \tan x = 10$.

7. Use the quotient rule to find the derivative:

$$f(\theta) = \sec \theta = \frac{1}{\cos \theta}$$

8. Find the limit if it exists. If not, write d.n.e or ∞ or $-\infty$.

$$\lim_{x \rightarrow 2^-} \frac{x+3}{x-3}$$

9. Find the equation of the tangent line to the graph of $x^2 + y^2 = 10$ at the points $(-1, 3)$.

10. Find:

$$y'' \text{ for } y = \frac{2}{x^3}.$$