

Mathematics 1101Y – Calculus I: functions and calculus of one variable
TRENT UNIVERSITY, 2010–2011

Quizzes

Quiz #1. ~~Friday, 24~~ Monday, 27 September, 2010. (10 minutes)

1. Find the location of the tip of the parabola $y = 2x^2 + 2x - 12$, as well as its x - and y -intercepts. [5]

Quiz #2. Friday, 1 October, 2010. (10 minutes)

1. Solve the equation $e^{2x} - 2e^x + 1 = 0$ for x .

Hint: Solve for e^x first . . .

Quiz #3. Friday, 8 October, 2010. (10 minutes)

1. Evaluate the limit $\lim_{x \rightarrow 1} \frac{x^2 + x - 2}{x - 1}$, if it exists. [5]

Quiz #4. Friday, 15 October, 2010. (10 minutes)

1. Use the limit definition of the derivative to compute $f'(2)$ if $f(x) = x^2 + 3x + 1$. [5]

Quiz #5. ~~Friday, 22 October~~ Monday, 1 November, 2010. (10 minutes)

1. Find $f'(x)$ if $f(x) = \frac{x^2 + 2x}{x^2 + 2x + 1}$. Simplify $f'(x)$ as much as you reasonably can. [5]

Quiz #6. Friday, 5 November, 2010. (10 minutes)

1. Find $\frac{dy}{dx}$ if $y = \sqrt{x + \arctan(x)}$. [5]

Quiz #7. Friday, 12 November, 2010. (10 minutes)

1. Find the maximum and minimum of $f(x) = \frac{x}{1 + x^2}$ on the interval $[-2, 2]$. [5]

Quiz #8. Friday, 26 November, 2010. (10 minutes)

1. Find an antiderivative of $f(x) = 4x^3 - 3 \cos(x) + \frac{1}{x}$. [5]

Quiz #9. Friday, 3 December, 2010. (10 minutes)

1. Compute the definite integral $\int_0^1 (2x + 1) dx$ using the Right-hand Rule. [5]

Hint: You may assume that $\sum_{k=1}^n k = 1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$.

Quiz #10. Friday, 10 December, 2010. (10 minutes)

1. Find the area between the graphs of $f(x) = \sin(x)$ and $g(x) = \frac{2x}{\pi}$ for $0 \leq x \leq \frac{\pi}{2}$. [5]

Quiz #11. Friday, 14 January, 2011. (10 minutes)

1. Compute $\int_0^{\pi/2} \cos^3(x) dx$. [5]

Quiz #12. Friday, 21 January, 2011. (10 minutes)

1. Compute $\int \tan^3(x) \sec(x) dx$. [5]

Quiz #13. Friday, 28 January, 2011. (10 minutes)

1. Compute $\int \frac{1}{\sqrt{4+x^2}} dx$. [5]

Quiz #14. Friday, 4 February, 2011. (15 minutes)

1. Compute $\int \frac{4x^2 + 3x}{(x+2)(x^2+1)} dx$. [5]

Quiz #15. Some time or other, 2011. (15 minutes)

1. Find the area of the surface obtained by revolving the curve $y = \sqrt{1-x^2}$, where $0 \leq x \leq 1$, about the y -axis. [5]

Quiz #16. Some time or other, 2011. (12 minutes)

1. Sketch the region bounded by $r = \tan(\theta)$, $\theta = 0$, and $\theta = \frac{\pi}{4}$ in polar coordinates and find its area. [5]

Quiz #17. Friday, 11 March, 2011. (12 minutes)

1. Find the arc-length of the parametric curve $x = \sec(t)$, $y = \ln(\sec(t) + \tan(t))$, where $0 \leq t \leq \frac{\pi}{4}$.

Quiz #18. Friday, 18 March, 2011. (10 minutes)

1. Compute $\lim_{n \rightarrow \infty} \frac{n^2}{e^n}$. [5]

Quiz #19. Friday, 25 March, 2011. (10 minutes)

1. Determine whether the series $\sum_{n=0}^{\infty} \frac{1}{n^2 + 2^n}$ converges or diverges. [5]

Quiz #20. Friday, 1 April, 2011. (15 minutes)

1. Determine whether the series $\sum_{n=1}^{\infty} \frac{(-1)^n \ln(n)}{n}$ converges absolutely, converges conditionally, or diverges.

Quiz #21. Friday, 8 April, 2011. (10 minutes)

1. Determine whether the series $\sum_{n=1}^{\infty} \frac{n}{2^n}$ converges or diverges.