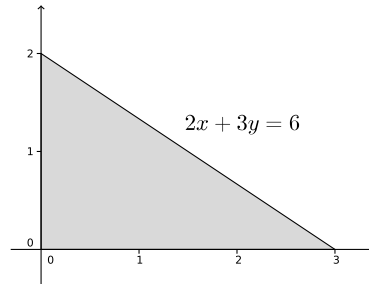


Math 1860-011, Summer 2015

Quiz 1

1. Set up an integral to find the volume of the solid generated by revolving about the x -axis the shaded region pictured below.



2. Evaluate $\int_0^{\pi/6} \cos(x) \sqrt{\sin(x)} dx$.

Quiz 2

1. Set up an integral to find the volume of the solid generated by revolving about the y -axis the region bounded by the curve $y = x^2 + 1$ and the lines $x = 0$, $y = 0$, and $x = 2$.
2. Find the length of the curve $y = \frac{2}{3}x^{3/2}$ for x from 1 to 4.

Quiz 3

1. Evaluate $\int x^2 e^{-x} dx$.

2. Find the equation of the tangent line to the curve $y = 2 - x + x^2$ at $x = 2$.

Quiz 4

1. Evaluate $\int_0^{\pi/2} \sin^2 \theta \cos^3 \theta \, d\theta$.

2. Evaluate $\int_0^5 \sqrt{25 - x^2} \, dx$.

Quiz 5

1. Evaluate $\int \frac{dx}{x^3 - x^2}$.

2. Evaluate $\int \frac{dx}{x^3 + x}$.

Quiz 6

1. Evaluate $\int_0^{\infty} \frac{x \, dx}{(x^2 + 4)^{3/2}}$

2. Evaluate $\int_0^{\infty} x e^{-x} \, dx$

Quiz 8

1. Find the interval of absolute convergence for the series $\sum_{n=0}^{\infty} \frac{(x+1)^{2n}}{9^n}$.
Extra credit: Give the sum of the series as a function of x .

2. Find the Taylor polynomial of order 3 generated by $f(x) = \sqrt{1+x}$ at $a = 0$.

Quiz 9

1. Find the Taylor series at $x = 0$ for the function $f(x) = x^2 \sin(x)$.
Extra credit: Give the radius of convergence.

2. Find the Taylor series at $x = 0$ for the function $f(x) = \sqrt{1 + 3x}$.
Extra credit: Give the radius of convergence.

Quiz 10

1. Find the radius of convergence for the power series $\sum_{n=0}^{\infty} \frac{x^{2n+1}}{(2n+1)4^n}$.

Extra credit: Give the function that the series converges to on the interval of convergence.

2. Find the interval of absolute convergence for the power series

$\sum_{n=0}^{\infty} (n+1)(x+3)^n$. *Extra credit:* Give the function that the series converges to on the interval of convergence.

Quiz 11

1. Which of the following series converge? Circle those that converge and put a large **X** thru those that diverge.

$$A. \sum_{n=1}^{\infty} \frac{(-1)^n}{n\sqrt{n}}$$

$$B. \sum_{n=1}^{\infty} \frac{3}{\sqrt{n}}$$

$$C. \sum_{n=1}^{\infty} \frac{n}{n^2 + 1}$$

$$D. \sum_{n=1}^{\infty} \frac{1}{n^2 + n}$$

2. Which of the following series converge? Circle those that converge and put a large **X** thru those that diverge.

$$A. \sum_{n=2}^{\infty} \frac{(\ln(n))^3}{n^2}$$

$$B. \sum_{n=2}^{\infty} \frac{n^3}{2^n}$$

$$C. \sum_{n=1}^{\infty} \frac{1}{\sqrt{2n+1}}$$

$$D. \sum_{n=3}^{\infty} \frac{(2n+1)^3 2^{n+1}}{(n-2)^2 3^{n-1}}$$

Quiz 12

1. Which of the following series converge? Circle those that converge and put a large **X** thru those that diverge.

$$A. \sum_{n=1}^{\infty} \frac{(n!)^2}{(2n)!}$$

$$B. \sum_{n=1}^{\infty} \frac{n!}{n^n}$$

$$C. \sum_{n=1}^{\infty} \frac{3^n (n!)^2}{(2n)!}$$

$$D. \sum_{n=1}^{\infty} \frac{3^n n!}{n^n}$$

2. Which of the following series converge absolutely, which converge conditionally, and which diverge? Circle those that converge absolutely, put a large star **★** next to those that converge conditionally, and put a large **X** thru those that diverge.

$$A. \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{\sqrt{n}}$$

$$B. \sum_{n=1}^{\infty} \frac{(-1)^{n-1} n}{n + \sqrt{n}}$$

$$C. \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n^3 - 3n^2 + 5n - 1}$$

$$D. \sum_{n=1}^{\infty} \frac{(-1)^{n-1} 10^n}{n!}$$

Quiz 13

1. Find dy/dx if $e^y + x^2 = y^2$.
2. Find $\frac{d}{dx} \int_0^{x^2} u^5 e^u du$.

Quiz 14

1. Find a parametrization of the line thru the points $(1, -3)$ and $(3, 2)$.
2. Compute dy/dx and d^2y/dx^2 at $t = 1$ for the parametric curve $x = t^2$,
 $y = t^3 + 2t$.

Quiz 15

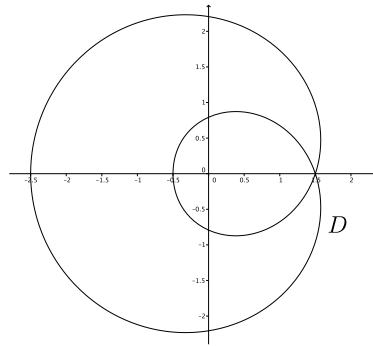
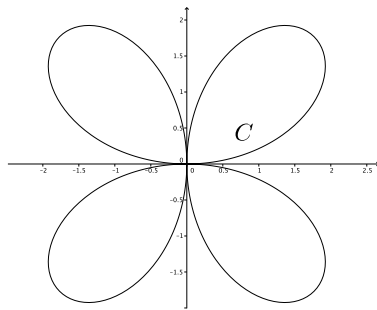
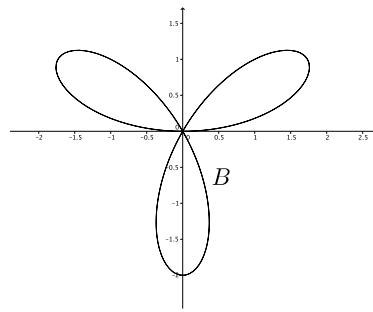
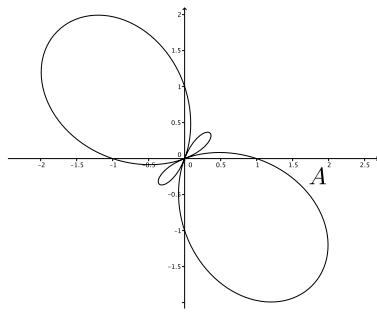
Match the polar graphs below to the following equations. If an equation has no matching graph mark it 'None of these'. *Extra credit:* If an equation has no match then provide its graph. If a graph has no matching equation then find a defining equation.

1. $r = \frac{3}{2} + \frac{1}{2} \sin(\theta)$

3. $r = \frac{5}{2} \sin(2\theta)$

2. $r = 1 - \frac{3}{2} \sin(2\theta)$

4. $r = 2 \sin(3\theta)$



Quiz 16

1. Find the area inside one loop of the polar graph $r = \sin(2\theta)$.
2. Convert the polar equation $r = \sin(2\theta)$ to a cartesian equation.

Quiz 17

1. Compute $3\mathbf{v} - 2\mathbf{w}$, where $\mathbf{v} = \langle 2, -1, 0 \rangle$ and $\mathbf{w} = \langle 0, 1, 3 \rangle$.
2. Find a unit vector in the direction of \overrightarrow{AB} , where $A = (3, 2, 1)$ and $B = (1, 3, 3)$.

Quiz 18

1. Compute $\mathbf{v} \cdot \mathbf{w}$, where $\mathbf{v} = \langle 2, -1, 0 \rangle$ and $\mathbf{w} = \langle 0, 1, 3 \rangle$.
2. Compute $\mathbf{v} \times \mathbf{w}$, where $\mathbf{v} = \langle 2, -1, 0 \rangle$ and $\mathbf{w} = \langle 0, 1, 3 \rangle$.

Quiz 19

1. Find a parametrization of the line through $(3, 1, -2)$ that is perpendicular to the plane $x - y + 2z = 2$.
2. Find the area of the triangle with vertices $(1, 0, 2)$, $(2, -1, 0)$, and $(-1, -1, 3)$.