Exam

Name:

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- A
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- E

THIS

(1) Find a power series representation, and its interval of conve

$\left(\textbf{Hint}: x^2 - 2x = (x-1)^2 - 1.\right)$

$$\frac{1}{x^2-2x} = \frac{1}{-1+(x-1)^2} = \frac{-1}{1-(x-1)^2}$$

The series converges only if

and the interval of con

(2) Find the exact value of the series $\sum_{n=1}^{\infty} \frac{(-1)^{n-1} n^2}{2^{n/2}}$. $\Big(\textbf{Hint}: \frac{\ }{(1}$

$$\frac{d}{dx} \frac{x}{(1-x)^2} = \frac{1+x}{(1-x)^3} =$$

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

$$x \frac{1-x}{(1+x)^3} = \sum_{n}$$

$$\sqrt{2}(\sqrt{2}-1)^4 = \frac{1}{\sqrt{2}} \frac{1-1/\sqrt{2}}{(1+1/\sqrt{2})^3} =$$

(3) An

“th

(H

(4) Find

(Hi

(5) Finc

(6) Comp

$\left\langle \frac{1-}{1+} \right.$

B

a

a

a

(7) Pr
pa

(8) Fin

(9) Compute the limit

We have

so that

$\lim_{(x,y)\to(}$

(10) Show that all tange

At a poin

the gradie

and the

$(-e^{y_0/x_0}$

Since

$-x_0($

$= -x_,$

$= 0,$

any sur

(11)

(12)

(13) Find

at

at

(14) Find

(15) Find the (absolute) mi

Over the disc

e^{-2} =

the min value
attained at
point of t
circle with

(16) Compute the integral $\int$

By Fubini

(17) Compute the integ

(18) Compute the volum

(19) Use a double in
the circle $x^2 + y$

the circles

the "maxim

By using

the reg

$\iint_{D} d$

(20) Compute the tri

radius 1. (**Hint**

which $dV = \rho^2 \sin$

The integ

$=$ 2

$=$ 2

$=$

$=$