Exam

Name:

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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 $\sum_{n=1}^{\infty} \frac{(-1)^{n-1} n^2}{2^{n/2}}$. $\left(\textbf{Hint}: \frac{}{(1}\right.$

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

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

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

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

(3) An

“th

(H

(4) Find

(Hi

(5) Fin[illegible]

(6) Com[illegible]

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

B[illegible]

a[illegible]

a[illegible]

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(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

$-x_0 ($

$= \; -x_0$

$= \; 0 ,$

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 $x^2 + y$

thecircles
the "maxim

By using
the reg
$\iint_{D}$ d

(20) Compute the tri
radius 1. (**Hint**
which $dV = \rho^2$ si

The integ

= 2

= 2

=

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