GROUP NAME: $-e^{i\pi}$ Logo:	Student Names (First and Last) Speaker/Presenter: Shawn Daniel
Date: 12/06/12 Topics: Midterm Problems	Writer/Prep: Chintan Parekh QC/Leader: Hussain Yaseen

Instructions: A slip starts at position (1,7) & moves toward position (-7,1) at the same rate a boat moves from position (-1,3) to (1,-3) Do the path cross & Do they hit & #1

$(-7,1)-(1,7)=\langle -8,-6\rangle$ $(1,-3)-(-1,3)=\langle 2,-6\rangle$

$A(x,y)=(1,7)+t\langle -8,-6\rangle$

$B(x,y)=(-1,3)+t\langle 2,-6\rangle$

$x=1-8t=-1+2s$

$y=7-6t=3-6s$

$2=8t+2s$

$4=6t-6s$

$6=24t+6s$

$10=30t$

$t=3$

$2=8(3)+2s$

$-22=2s$

$s=-11$

For x

$1-8(3)=-1+2(-11)$

$-23=-23$

For y

$7-6(3)=3-6(-11)$

$-11\neq 69$

Cross No Hit No

$$\cos\theta=\frac{\vec{AB}\cdot\vec{CD}}{|\vec{AB}||\vec{CD}|}$$

$$=\frac{\langle -8,-6\rangle\cdot\langle 2,-6\rangle}{\sqrt{64+36}\sqrt{4+36}}$$

$$=\frac{20}{10\sqrt{40}}=.316\ldots$$

$$\theta=\cos^{-1}(.316\ldots)=71.565\ldots^{\circ}$$

Prof Porter Math Classwork

GROUP NAME: Logo: iVector	Student Names (First and Last) Speaker/Presenter: Shanna Thomas Writer/Prep: David Torres QC/Leader: Tom Dunn
Date: Topics:	
Instructions:	

Prof Porter — Math Classwork — 1E

GROUP NAME: Machinist	Student Names (First and Last)
Logo:	Speaker/Presenter: Jason Meyers
Date:	Writer/Prep: Matthew Steward
Topics:	QC/Leader:

Instructions: Midterm Review

$$r(t) = (7\cos t, 7\sin t, 49t)$$

3)

Distance:

$$\int_0^{30} \sqrt{(-7\sin t)^2 + (7\cos t)^2 + (49)^2}\, dt \qquad r'(t)$$

$$\int_0^{30} \sqrt{49(\sin^2 t + \cos^2 t) + 49^2}\, dt$$

$$\int_0^{30} \sqrt{49 + 49^2}\, dt$$

$$\sqrt{2450}\, t \Big|_0^{30} = \boxed{30\sqrt{2450}}$$

Position:

$$\boxed{r(30) = (1.08\ldots, -6.92\ldots, 1470)}$$

Direction:

$$r'(t) = (-7\sin t, 7\cos t, 49)$$

$$\boxed{r'(30) = (6.91\ldots, 1.08\ldots, 49)}$$

Prof Porter Math Classwork

GROUP NAME: Cougar Logo:	Student Names (First and Last) Speaker/Presenter: Adam Burrows
Date:	Writer/Prep: Ryan Eggert
Topics:	QC/Leader: Mary Duffy

Instructions:

#4) Level curve for $z = 0, 1, 3$

$z = 0$: $x^2 - y + 4z^2 = 20$

$x^2 - y + 0 = 20$

$x^2 - 20 = y$

$z = 1$: $x^2 - y + 4 = 20$

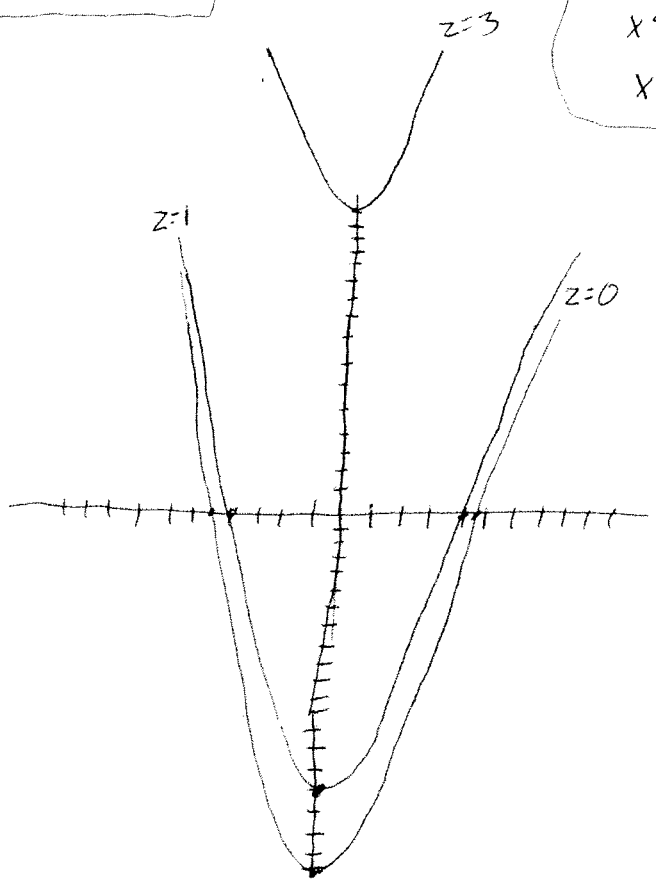
$x^2 - 16 = y$

$z = 3$: $x^2 - y + 4(3)^2 = 20$

$x^2 - y + 36 = 20$

$x^2 - y = -16$

$x^2 + 16 = y$



GROUP NAME: Imagination

Logo: $\sqrt{-1}$ & Math!

Date: 2/6/12

Topics: Midterm Question #5

Student Names (First and Last)

Speaker/Presenter: Gabe Sashihara

Writer/Prep: Ksusha Rychkova

QC/Leader:

Instructions: Determine the absolute maximum and minimum values for the function below assuming x is between 0 and 3 and y is between 0 and 2. $f(x,y) = 20 - x^2 + 2xy - 2y$ Determine if there are any saddlepoints

$f_x = -2x + 2y \quad f_y = 2x - 2 \quad f_{xy} = 2$

$f_{xx} = -2 \quad f_{yy} = 0$

$f_x = 0 = -2x + 2y$

$-2 + 2y = 0$

$y = 1$

$f_y = 0 = 2x - 2$

$x = 1$

$20 - 1^2 + 2 \cdot 1 \cdot 1 - 2 \cdot 1 = 19$

point (1, 1, 19)

$D = -2(1,1) \cdot 0(1,1) - 2(1,1)^2 =$

$= -2 \cdot 0 - 4 = -4$

$D < 0$, so saddle point at (1, 1, 19)

$0 \le x \le 3 \quad 0 \le y \le 2$

$20 - 0^2 + 2(0)(0) - 2(0) = 20$ point (0, 0, 20)

$20 - 3^2 = 11$ point (3, 0, 11)

$20 - 0 + 0 - 2 \cdot 2 = 16$ point (0, 2, 16)

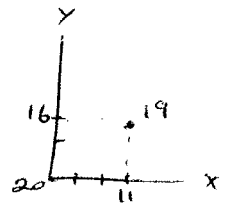
$20 - 3^2 + 2(3)(2) - 2(2) = 19$ point (3, 2, 19)

2 Values = 20, 11, 16, 19

max = 20

min = 11

endpoints



~~Edge~~

~~$f(x,0) = 20 - x^2$~~ $\frac{\partial f}{\partial x} = -2x = 0 \quad x = 0$ point (0, 0, 20)

~~$f(x,2) = 20 - x^2 + 4x - 4 = 16 - x^2 + 4x$~~ $\frac{\partial f}{\partial x} = -2x + 4 = 0 \quad x = 2$ point (2, 2, 19)

~~$f(0,y) = 20 - 2y$~~ $\frac{\partial f}{\partial y} = -2$ point (0,

~~$f(3,y) = 20 - 9 + 18y - 2y = 11 + 16y$~~ $\frac{\partial f}{\partial y} = 16$ point (

Edge

$f(x,0) = 20 - x^2 \quad \frac{\partial f}{\partial x} = -2x = 0$ point (0, 0, 20) (max)

$f(x,2) = 20 - x^2 + 4x - 4 = 16 - x^2 + 4x \quad \frac{\partial f}{\partial x} = -2x + 4 = 0 \quad x = 2$ point (2, 2, 2

$f(0,y) = 20 - 2y \quad \frac{\partial f}{\partial y} = -2$ point (0, 0, 20) (max)

$f(3,y) = 20 - 9 + 6y - 2y = 11 + 4y \quad \frac{\partial f}{\partial y} = 4$ point (3, 2, 19)

max = (0, 0, 20), (2, 2, 20)

min = (3, 0, 11)

saddle point = (1, 1, 19)

Prof Porter Math Classwork 18

GROUP NAME: Team ENG	Student Names (First and Last)
Logo:	Speaker/Presenter: Eli Wang
Date: 12/6/2012	Writer/Prep: Tyler Wardlow
Topics: Mid term Review	QC/Leader: Pavel Litoruich

Instructions: 6. If the height of a roof is given by $z = 20 - x^2 + 2xy -$
Find greatest slope at $(1,2)$
Find Direction Derivative from $(0,0)$ to $(1,2)$

Greatest Slope

$$\nabla h = \langle h_x, h_y \rangle$$

$$\nabla h = \langle -2x+2y, 2x-2y \rangle$$

$$|\nabla h| = \sqrt{(-2x+2y)^2+(2x-2y)^2} = \sqrt{(-2(1)+2(2)^2+(2(1)-2(2))^2}$$

$$|\nabla h| = \sqrt{2^2+(-2)^2} = \boxed{\sqrt{8}}$$

Directional Derivative from $(0,0)$ to $(1,2)$

$$D_u f(x_0,y_0) = f_x(x_0,y_0)u_x + f_y(x_0,y_0)u_y$$

$$u = u_x\hat{i} + u_y\hat{k}$$

$$u = \frac{\langle 1,2 \rangle}{\sqrt{5}} = \left\langle \frac{1}{\sqrt{5}}, \frac{2}{\sqrt{5}} \right\rangle$$

$$D_u f(x_0,y_0) = (-2x+2y)\left(\frac{1}{\sqrt{5}}\right) + (2x-2y)\left(\frac{2}{\sqrt{5}}\right)$$

Evaluated at $(x_0,y_0) = (0,0)$ or the starting point

$$(-2(0)+2(0))\left(\frac{1}{\sqrt{5}}\right) + (2(0)-2(0))\left(\frac{2}{\sqrt{5}}\right) = \boxed{0}$$

Prof Porter Math Classwork

GROUP NAME: Bio Bros	Student Names (First and Last)
Logo:	Speaker/Presenter: Andrew C
Date: 12/6/12	Writer/Prep: Rohan B
Topics: Midterm Review	QC/Leader:
Instructions: #7	

#7

a. $f(x,y) = \frac{2x-y^2}{x^2-2y} + 100$

$\lim_{(0,y)\to(0,0)} \frac{2x-y^2}{x^2-2y} + 100 = \frac{-y^2}{-2y} + 100 \xrightarrow{L} \frac{-2y}{-2} + 100 = \boxed{100}$

b $\lim_{(x,x)\to(0,0)} \frac{2x-y^2}{x^2-2y} + 100 = \frac{2x-x^2}{x^2-2x} + 100 = -1 + 100 = \boxed{99}$

C. Because $99 \neq 100$ (Different limits), $f(x,y)$ is not continuos.

Prof Porter Math Classwork ME

GROUP NAME: Mechanics	Student Names (First and Last)
Logo:	Speaker/Presenter: Matthew Ali
Date: 12-6-16	Writer/Prep: Louis Moscoso Morales
Topics:	QC/Leader: Justin Lefler

Instructions:

8.) $dV = \frac{\partial V}{\partial r}\,dr + \frac{\partial V}{\partial h}\,dh$

$dV = 2\pi rh(\pm 0.07) + \pi r^2(\pm .03)$

when $h = 11cm$, $r = 9cm$

$dV = 2\pi(9)(11)(\pm 0.07) + \pi(81)(\pm .03)$

$= (43.542\ldots) + (7.634\ldots)$

$= \pm 51.176\ldots$

Prof Porter Math Classwork

GROUP NAME: CSM	Student Names (First and Last)
Logo: 10	Speaker/Presenter: Jason Tian
Date: 10	Writer/Prep: Brandon Berrios
Topics: 7	QC/Leader: Beth Porter
Instructions:	

$$\int_0^2 \int_0^{\sqrt{4-x^2}} 5y \, dy \, dx$$

$$\int_0^2 \frac{5y^2}{2} \Big|_0^{\sqrt{4-x^2}} dx$$

$$\frac{5\left(\sqrt{4-x^2}\right)^2}{2} = \frac{5(4-x^2)}{2} = \frac{20-5x^2}{2} = \frac{20}{2} - \frac{5x^2}{2} = \frac{10-5x^2}{2}$$

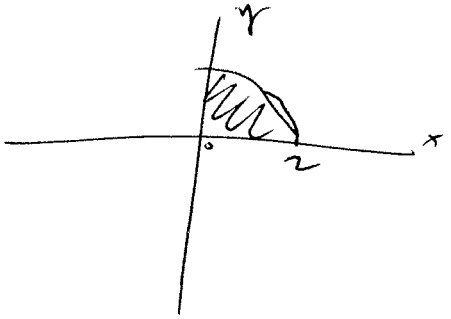
$$\int_0^2 \frac{10-5x^2}{2} dx = 10x - \frac{5x^3}{6} \Big|_0^2$$

$$= 20 - \frac{40}{6} = 13.\overline{3}$$

$y = \sqrt{4-x^2}$

$y^2 = 4 - x^2$

$x^2 + y^2 = 4$



GROUP NAME:	Student Names (First and Last)
Logo: Supremum 4 10	Speaker/Presenter: Robert Alberto
Date:	Writer/Prep:
Topics:	QC/Leader:

Instructions:

Problem # 10 → Double Integral

$$\iint_R (x^2 + 4xy)\, dA$$

$$= \int_{-2}^{1} \int_{0}^{7} x^2 + 4xy \, dy \, dx$$

$$= \int_{-2}^{1} x^2y + 2xy^2 \Big|_0^7 \, dx$$

$$= \int_{-2}^{1} 7x^2 + 98x \, dx$$

$$= \frac{7}{3}x^3 + 49x^2 \Big|_{-2}^{1}$$

$$= \frac{7}{3} + 49 - \left(\frac{-56}{3} + 196\right)$$

$$\frac{63}{3} + 49 - 196 = 21 + 49 - 196 = -126$$

Prof Porter Math Classwork

GROUP NAME: Team # - $e^{i\pi}$	**Student Names (First and Last)**
Logo: $-e^{i\pi}$	**Speaker/Presenter:** Shawn Daniel
Date: 12/6/12	**Writer/Prep:** Chintan Parekh
Topics: Final Preperation / Midterm Review	**QC/Leader:** Husain Yaseen

Instructions: Question # 11

Partial Derivatives

$g(x,y) = ye^{2x}$, $x(u,v) = u + 2v$, $y(u,v) = 3u - v$

Find $\frac{\partial g}{\partial y}$, $\frac{\partial g}{\partial x}$, $\frac{\partial x}{\partial u}$, $\frac{\partial y}{\partial u}$, $\frac{\partial g}{\partial u}$

$$\frac{\partial g}{\partial y} = e^{2x} = e^{2(u+2v)}$$

$$\frac{\partial g}{\partial x} = 2ye^{2x} = 2(3u-v)e^{2(u+2v)}$$

$$\frac{\partial x}{\partial u} = 1$$

$$\frac{\partial y}{\partial u} = 3$$

$$\frac{\partial g}{\partial u} = \frac{\partial}{\partial u}(3u-v)e^{2(u+2v)} = 3e^{2(u+2v)} + 3(u-v)2e^{2(u+2v)}$$