

HW 14.8

due 10/18/20

$$\nabla f = \langle 2x, 2y \rangle \quad \nabla g = \langle 2, 3 \rangle \quad 2x = 2\lambda \quad 2y = 3\lambda$$

$$2\lambda + \frac{3}{2}\lambda = 6 \quad \rightarrow \quad \lambda = \frac{12}{7} \quad \text{Min} = \frac{36}{14} \quad \text{Max} = \text{DNE}$$

$$\nabla f = \langle y, x \rangle \quad \nabla g = \langle 8x, 18y \rangle \quad y = 28x \quad x = 218y$$

$$xy = 1442^2 xy \quad x = 1442^2 y \quad y = 1442^2 x$$

$$\nabla f = \langle 2x, 2y \rangle \quad \nabla g = \langle 4x^3, 4y^3 \rangle \quad x = 2\lambda x^3 \quad y = 2\lambda y^3$$

$$\lambda = \quad \star \text{ review don't understand}$$

$$\nabla f = \langle 3, 2, 4 \rangle \quad \nabla g = \langle 2x, 4y, 12z \rangle \quad 3 = 2\lambda x \quad 2 = 4\lambda y \quad 4 = 12\lambda z$$

Solve using system of equations for λ

$$\text{Max} = 3.7 \quad \text{Min} = -3.7$$

ARC

13. $\nabla f = \langle y, x, z \rangle$ $\nabla g = \langle 2x, 2y, 2z \rangle$
 $y = 2\lambda x$ $x = 2\lambda y$ $z = 2\lambda z \rightarrow 1 = 2\lambda$
 $x^2 + y^2 + z^2 = 36$ solve using system of eq. for λ
 Max = 20 Min = -20

15. $\langle y+z, x, x \rangle$ $\nabla g = \langle 2x, 2y, 2z \rangle$
 $y+z = 2\lambda x$ $x = 2\lambda y$ $x = 2\lambda z \rightarrow \lambda z = \lambda y \rightarrow z = y$
 $x^2 + y^2 + z^2 = 4$ solve for λ using Soc.
 Max = $2\sqrt{2}$ Min = $-2\sqrt{2}$